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## IN THIS ISSUE

THE Committee on Preventive Medicine and Social Science Research has been established by the Social Science Research Council for the purpose of defining and developing areas of mutual interest to public health and social science. To stimulate discussion, the Committee has commissioned a number of memoranda reviewing research needs and opportunities in selected topical areas. Two papers in this issue are revised versions of such memoranda. One of these is "Ecologic Determinants of Population Growth," by Carl E. Taylor, M.D., John B. Wyon, M.B., and John E. Gordon, M.D. The authors of this paper describe the approaches of the various sciences and disciplines to population dynamics. They give especial emphasis to the "epidemiologic" approach and discuss its application in field research in areas such as India.

The other paper is "Some Directions for Research in Fertility Control" by Dr. J. Mayone Stycos. The author expresses the view that past efforts at introducing technical change in the underdeveloped areas have concentrated too exclusively on the peasants and laborers. He emphasizes the importance of directing more attention to the "elite." He states that "the elite are strategic in terms of setting personal examples of behavior, or of more directly disseminating new ideas." In his discussion of lower class fertility patterns, the author reviews the experience of workers in various areas of the world, including his own experience in Puerto Rico and Jamaica.



An interesting component of the baby boom since 1940 has been the great increase in the fertility rates of nonwhites in

the United States. Much of this has stemmed from a remarkable decline in proportions childless. These situations are described in this issue in Clyde V. Kiser's paper "Fertility Trends and Differentials Among Nonwhites in the United States." This paper is based largely upon data from the Censuses of 1910, 1940, and 1950 regarding children ever born by color, age, urban-rural residence, and socio-economic factors.

## ECOLOGIC DETERMINANTS OF POPULATION GROWTH<sup>1</sup>

CARL E. TAYLOR, M.D.; JOHN B. WYON, M.B.;

AND JOHN E. GORDON, M.D.

**D**EATH rates always have tended to fall more promptly than birth rates in response to an improved environment. This holds whether the changes are incident to the modern industrial and sanitary revolution or in groups making the transition from nomadic to agricultural life. Vance (21) has named the disparity between birth and death rates the "demographic gap." As long as it exists a population increases in numbers.

Many biological and social forces act to keep a society alive, through protecting its members from death by disease, by violence, or by lack of essentials such as food. Modern public health procedures have the capacity to lower the death rate of almost any country from an uncontrolled rate of more than 30 per 1,000 to less than 10 per 1,000 (16).

By contrast, birth rates change slowly. Most cultures have a well established tradition favoring large families because of the need to balance losses from wars, famines, and especially communicable diseases. Success in reducing the death rate produces no immediate change in cultural patterns producing a high birth rate, especially where high fertility is endorsed by religion. A slow spontaneous reduction in numbers of births has often been advantageous to developing urbanization and

<sup>1</sup> From the Department of Epidemiology, Harvard School of Public Health, Boston, Massachusetts. This essay is a revised version of a memorandum originally commissioned by the Committee on Preventive Medicine and Social Science Research. The Committee has been established by the Social Science Research Council to define and develop areas of mutual interest to public health and social science. The Committee and the writers recognize that efforts to limit population represent only one of many possible approaches to the complex problem of improving the balance between population, health, and means of subsistence in certain regions of the world. Following the Committee's request, the authors have addressed the problem of studying fertility dynamics with special attention to particular regions familiar to them. Within this limitation the writers have developed their topic as they saw fit.

industrialization because the demographic gap produced extra people to populate the cities and man the new industries.

Economic development tends to stimulate population growth and to raise the standard of living. If the population side of the equation pushes ahead there is similar pressure to increase economic production. In the process a lag is common, and severe shortages in goods and in necessities of life may occur. To establish a workable equilibrium spontaneous cultural changes take place, with reduction of birth rates being a usual outcome. In Ireland the population increased so rapidly in the eighteenth and early nineteenth centuries that the country was highly vulnerable to famine when potato blight struck. Fragmentation of family land holdings contributed to the precarious state of the national economy. Large scale emigration gave temporary relief. Birth rates declined because of compensating cultural changes which delayed the marriage of women until about the age of thirty years, while those never marrying increased to almost 30 per cent. (14) (17) Cultural groups in other countries have accepted various methods of family planning. In particular situations, drastic procedures have been practiced such as abortion in Japan during recent years. (20)

The ultimate decision to limit family size rests with parents. Families are usually responsive to the economic and social influences which determine the capacity of a society to accommodate greater or fewer numbers of children. Within the limits of their psychological and social needs, parents ordinarily will wish to have the number of children they can properly care for. Modern medical science makes it possible for parents to determine with some assurance the number of children they are going to have and when they will be born. The objective is a pattern of fertility more nearly in accord with the needs and capacity of current social and economic conditions, than that dictated by a cultural tradition of past generations.

In many countries the carrying capacity of the local economy

is sufficient to sustain a reasonable population growth. In more than half of the world, however, social need requires attention to the numbers of children added to the population, and to the spacing within families that they may receive proper care. (8)

#### SCIENCES CONCERNED WITH POPULATION DYNAMICS

A number of scientific disciplines contribute actively to knowledge of fertility. Population growth can be studied at three levels; in the laboratory, or clinically in respect to the individual person, or with the community or population under natural conditions in the field. Laboratory workers include biologists, physiologists, biochemists, and pharmacologists. Clinical study of the individual is variously by obstetricians, psychiatrists, endocrinologists, and others. At the group or population level are demographers, sociologists, anthropologists, economists, and public health workers. An understanding of the functions of the several disciplines contributes to coordinated effort.

*Biologists, Physiologists, and Pharmacologists.* The complexity of the population problem commonly requires that specific questions be taken to the laboratory to reduce the number of variables. Much has been learned there about the physiology of reproduction. Fundamental sexual functions, the factors which influence conception, and those that determine the outcome of pregnancy have had attention.

The principles of human reproduction are sufficiently defined to provide measures for increasing or decreasing chances of conception. Until recently, attempts to avoid pregnancy were directed mainly toward preventing the sperm by local or mechanical methods from reaching the ovum. Newer studies (15) suggest the usefulness of preparations which modify ovulation or disturb the endocrine balance governing successful implantation of the ovum in the uterine mucosa. The methods are not sufficiently established to warrant general use.

*Clinical Approach.* A sharp distinction between laboratory

and clinical approaches cannot be made because clinical investigation these days commonly includes laboratory techniques. Many basic questions related to menstruation, ovulation, conception, sterility, and the diseases and physiologic states which modify fertility can be studied to advantage with clinic patients. Endocrinological influences and their fluctuations often are best observed in individuals who show aberrations. Furthermore, the biological effectiveness of contraceptive methods desirably is tested first by laboratory methods and then by clinical trial before field studies are considered.

From the standpoint of service and of medical care, clinics have had their greatest usefulness in meeting the needs of urban populations, especially in Western countries; they have had limited application in rural populations.

Preoccupation with contraception should not cloud the opposite problem of helping mothers who want children but have difficulty in conceiving. Research on sterility is largely clinical, but also a function of laboratory investigation. Fruitful study is also directed toward pregnancy wastage and fetal development.

*Demography.* The major contribution of demography is in tracing fluctuations in population growth and decline, and in defining the principles concerned. Mainly a descriptive science, it has developed sound statistical procedures for projecting population trends.

Demography has given special attention to environmental factors responsible for changes in birth and death rates. It has established correlations between fall in birth rates and such factors as urbanization, education, desire to retain land holdings in agricultural societies, and desire for modern facilities, such as automobiles and better education of children.

*Social Sciences and Economics.* Although once primarily descriptive, these disciplines are concerned increasingly with attempts to produce changes in social structure, sometimes termed social engineering. The difficulties are great because in a democratic society groups often react in unpredictable and



uncontrolled fashion. Advertising can induce people to switch to a new brand of toothpaste, but to influence a young couple in their decision of whether to buy a car or have a baby is more difficult. An Asiatic country can stimulate urbanization by building factories in cities to attract village people, but the total shift in rural-urban population, with some notable exceptions, is commonly small and slow.

Populations grow as social and economic conditions improve. The demographic gap that comes almost invariably as death rates start to fall, even with prompt efforts to reduce birth rates, is usually sufficient to permit a sizable population increase. As a consequence much of the benefit from agricultural and industrial expansion is neutralized in caring for the added numbers. (8)

*Public Health Approach.* Epidemiology is the diagnostic discipline of public health. Public Health Practice (5) is the discipline responsible for applying the principles and techniques developed by epidemiology. Often defined as medical ecology (4), epidemiology is thus a part of human ecology, a science specifically concerned with interaction between a population and its environment. One of the earliest interests of plant and animal ecologists was the matter of numbers. It is thus particularly appropriate that epidemiological methods be turned to population dynamics. (6)

Public health has been blamed for the population problem through "irresponsible" lowering of death rates. (22) Public health workers in turn are increasingly aware of the ways in which population pressures are influencing the health of the public. In countries such as Japan and India an attempt to lower the birth rates is recognized as an obligation of public health, using the community approach so effective in lowering death rates. The work of private doctors and birth control clinics with individual patients and the encouragement of changes in social conditions such as urbanization and education are other parts of a general program.

Clinics and private practitioners have contributed appreci-

ably to family planning in Western countries, because medical services are available to enough of the population to have an overall effect. Countries such as India have little prospect, within a reasonable time, of reaching the bulk of the population through existing or projected clinic programs. Family planning clinics may have a contribution to make in the cities, but there are not enough doctors and nurses to reach the 85 per cent of the population living in the villages. Where protection of the individual is the immediate consideration, methods giving maximum protection often are applicable even though expensive and bothersome to the person concerned. This holds whether the problem is protection against communicable disease or this question of too many people.

In public health, the objective is satisfactory service for a whole population rather than high grade service to a few. The technical method selected may be a procedure somewhat less effective than that used clinically, but better suited to general use because of cost or safety. Economic feasibility and social acceptability must be balanced against biological efficiency.

The methods of social engineering do not appear to provide the immediate answer in countries such as India. The social sciences have demonstrated the influence of spontaneously altered social forces on population numbers, but to induce these changes where communications are poor and political control is limited is decidedly difficult. A primary consideration is the spread of information about contraceptive methods. Without direction, such information tends to spread by hidden routes and not always reliably. Urbanization, education, and other social changes favor more rapid spread because people get together more, read more, and talk more. Supply lines are also better. A public health approach brings discussion of contraceptive methods into the open and provides for direct communication between experts and the public about preferences, needs and the practicability of procedures.

Health problems, such as the venereal diseases, alcoholism, and mental illness, are being included increasingly among re-



sponsibilities of official public health agencies. All have an important social component along with problems of morals, ethics and religious beliefs. The practicing physician has long been concerned with these problems in individual patients. Neither the social, clinical, or public health approach by itself has been able to meet these problems; together they can more effectively fulfill the community need.

*The Epidemiologic Method in Study of Population Dynamics.* Epidemiology today is concerned with all health problems of a population. The original concern with communicable diseases largely had to do with dramatic epidemics. Events were surveyed, recorded, and analyzed in terms of time, place, and person; data on host and environmental relationships were collected and evaluated; the balancing of multiple factors became the standard approach to causality. Eventually epidemiologic methods had wider application in the study of infections as they occurred under ordinary circumstances and as persisting problems of a community. As the communicable diseases came under control these same techniques were applied to non-communicable conditions, starting with the deficiency diseases of pellagra, scurvy, and endemic goiter. The present range of interest includes diabetes, heart disease, cancer, mental illness, accidents, and many others.

In recent years epidemiology has extended its interests to considerations of health. Fluctuations in health are not due solely to an absence of disease. Growth and development, adequate nutrition, a proper functioning and use of body parts, together with the related mental adjustment, are recognized as parts of personal hygiene. Physiologic fluctuations in health incident to the cyclic changes accompanying menstruation have had attention from clinicians, but not from epidemiologists. Pregnancy is clearly a normal physiologic state and as a mass phenomenon has an important part in an epidemiology of health. The frequency, variations, complications, and end results of pregnancy as they affect groups of people are basic to an epidemiological study of human reproduction.

The standard epidemiological approach to health and disease as they affect populations of people is to gather information on contributing factors relating to the host population and to the environment. The attempt then is to demonstrate correlations bearing on causality. Remedy rests in specific measures directed toward identified and significant factors. Possible factors in fertility of populations are now considered.

#### HOST FACTORS

*Genetic Factors.* The differences in fertility between races and among families can be studied to determine if a tendency to large families is an inherited characteristic. This factor is particularly difficult to isolate from cultural patterns which appear to be the stronger determinant.

*Physiological Factors.* The cyclic changes associated with menstruation bring multiple changes in endocrine balance. Ovulation, preparation of the uterus for reception of the ovum, and such apparently minor matters as changes in consistency of mucus of the uterine cervix (1) have been shown to be important factors in successful fertilization and conception. Improved methods for contraception require better understanding of reproductive physiology. (9) (13)

The biological fact that a woman is only susceptible to fertilization during a few days each month has the same practical significance as if resistance to infection lapsed for a similar period. Calculations of probability of pregnancy, and conversely of protection from pregnancy, should be based on this limited chance each month of becoming pregnant. Field studies to provide more information on menstrual cycles and the factors which influence ovulation are clearly needed. The rhythm method of birth control depends on the regularity of menstruation under normal conditions. One irregular period or ovulation a year conceivably could neutralize careful calculations and assiduous self-control.

*Psychologic Factors.* A possible relation between psychological state and fertility has engendered many speculations,

one of which is that a good way for a sterile couple to have a baby of their own is first to adopt one. The basic sexual drive, however, is highly overlaid and modified by complicated motivations of cultural origin.

#### ENVIRONMENTAL FACTORS

*Physical Environment.* Physical environment is not known to directly affect fertility. Some evidence (10) suggests that age at onset of menstruation varies with climate although other factors such as nutrition have not been controlled. Fertility is said to be low among American Indian tribes living high in the Andes. (11)

Climate appears to affect fertility indirectly through influence on sleeping habits. During the hot summer weather in the Punjab, women commonly sleep on the roofs where there is little privacy if the husband is at home; often he sleeps in the fields to guard his grain. During winter months husband and wife sleep together under covers inside the house. Birth rates rise consistently in the autumn months.

*Biologic Environment.* Certain diseases, especially the venereal infections, produce pathological changes which decrease chances of conception. Gonorrhea is an important cause of sterility in women by causing salpingitis and cervicitis, with the added probability that purulent discharges in the vagina are spermicidal. The male suffers the acute effects of urethritis and the chronic effects of orchitis and epididymitis. Syphilis limits successful pregnancies by causing abortion and miscarriage, as do malaria and other major febrile illnesses. Fibrosis of the testicles is common in advanced stages of leprosy. Recent work on congenital anomalies proves that viruses are a hazard to the developing fetus. (7) Communicable disease control therefore contributes to population growth more subtly than through the generally recognized reduction of death rates: birth rates which would otherwise start a downward trend may be kept up or actually increase.

DeCastro (3) and his theories to the contrary, no evidence

supports the assertion that starvation and malnutrition increase fertility. The correlations advanced between high fertility and low protein diet are better explained by social and cultural differences. (8) People with poor diets also tend to have low standards of living and education, factors directly correlated with high fertility. On the other hand, clinicians who specialize in sterility believe that obesity tends to reduce fertility. Optimal nutritional state probably is conducive to fertility to the extent that it promotes general physiological function.

The folklore and empirical medical practice of many cultures give bits of information on various plant products of presumed contraceptive action. Sanyal's extract of garden peas (18) is an example of several preparations being tested in India and elsewhere.

*Social Environment.* Factors of the social environment are interwoven with those of the physical and biological environment, in general accord with ecologic principle. Of themselves they warrant major attention, if for no other reason than that they are less well defined.

Considerable information has been gathered by anthropologists on the fertility patterns of small and isolated tribal groups. Studies of large general populations are particularly needed, with appropriate attention to social groupings within the population and their varying beliefs and attitudes.

Ideas about the mechanisms involved in conception and birth vary greatly from one society to another. In the Punjab, the relationship between menstruation and pregnancy is described in analogy between the uterus and a field. Each month the fallow uterus receives the necessary products for the development of a fetus. If not used, the accumulated wastes are discharged during menstruation, with the uterus left like a plowed field waiting for seed. After menstruation the cervix is thought to remain open for a week or more and then gradually to close. The greatest chance of pregnancy is believed to be immediately after menstruation. A practice of rhythm

method of birth control was based on these ideas. Scientifically correct presentation of the physiology of reproduction challenged these beliefs and jeopardized the relations between the health workers and the people. A common reaction was that the health workers knew little of the "real facts of life."

Semen occupies an important place in the Indian value system, for it is considered the most precious fluid of the body, each drop representing a distillate of one hundred drops of blood and thus a high concentration of the vital forces of man. It should be conserved to maintain health and strength; thus an athlete abstains from intercourse. Urethritis and vaginitis are much feared because they represent a constant drain of the vital force. Communication with village people on family limitation and the contraceptive methods best suited to their cultural pattern would be inhibited by failure to appreciate these beliefs.

In most cultures babies are born ordinarily to married couples, and marriage signals the start of reproductive life. Age at marriage therefore influences the length of time a woman is exposed to pregnancy. However, an increase in minimum age at marriage does not necessarily result in a lower birth rate. Observations from the Punjab suggest that women who marry between the ages of 18-24 years actually have more children than women married at ages 14-18 years. In Ireland (17) delayed marriage of women has contributed significantly to lower birth rates, but only after the average age increased to about 30 years.

Cultural patterns also act in determining the number of women who remain unmarried. The range is from less than 10 per cent of women of marriageable age in India to more than 30 per cent in Ireland. The number who remain single after widowhood or divorce is another important variable.

Frequency of intercourse has an obvious bearing on the likelihood of pregnancy, for short intervals increase the chance of intercourse at the time of ovulation. In Puerto Rico (19) a man likes to have many children to show his prowess, while in

most of India it is considered desirable to conserve semen. The different fertility patterns among groups practicing polygamy, polyandry, monogamy, and modified celibacy are not known. Muhsam (12) reports that polygamous marriages among the Bedouins produced fewer children per married woman than did single marriage, although he recognized infertility of a wife as one of the reasons for polygamy.

The frequency of extramarital births varies greatly among different cultures. Puritanical cultures presumably have a high proportion of births within the family. The casual attitude in other cultures is typified by the Jamaican maid in Panama who once told us she was "making a baby for a friend." A third cultural pattern permits more sexual freedom to men than to women, an attitude often lending a tinge of immorality to use of contraceptives.

Most cultures place a high value on children and their proper rearing. High mortality rates in childhood favor keeping the number of births up to compensate for expected losses. It is part of national policy of some governments to encourage deliberately large families in order to increase manpower.

Some religions have firmly established tenets against contraception. This may be no more than a general policy that each family should have as many children as possible in order to increase the number of believers. A few religious groups have specific doctrinal prohibition of certain types of contraceptives. Others completely endorse contraception in family planning. The Lingayats, a subgroup of Hinduism in South India and numerous other cultures have prescribed religious rituals attached to sexual practices.

Under pressure of population increase, India and Japan have set up government programs to foster family planning. Voluntary health agencies are active in many countries. Newspaper and other propaganda for family planning are exerting a noticeable effect on popular attitudes.

The success of family planning programs depends a good deal on who makes the family decisions. In cultures where the hus-



band is the acknowledged authority, a lack of communication between the married couple may make it difficult for the wife even to express opinions. The usual pattern is for decision to be made jointly by husband and wife; under such conditions a family planning program must reach both.

The introduction of new practices in as intimate a matter as sex requires caution and a sensitive understanding of the attitudes of people. Mass advertising may produce resentment among conservative members of a community, thereby blocking accomplishment. Practices generally are easier to change than beliefs, which emphasizes the value of presenting a new practice in terms of established cultural concepts. This principle is recognized in health education as "starting where the people are." Experience in health education as applied to the population problem leads to the conclusion that family planning is developed most readily and unobtrusively as a part of a general health program.

The view is commonly held that limitation of family size through family planning leads to improved social and economic conditions. This assumption often is offered in justification of family planning, and of itself appears reasonable. Proof, however, is lacking, and indeed difficult to obtain because of other factors recognizably active. Long term studies of population control seemingly provide opportunity to acquire solid information, but first more precise methods of measuring economic and social change will have to be made available. The effect may well differ in agrarian and industrialized communities.

A more specific problem is the cost to the community of children who die before they are economically productive. Such deaths are frequent in countries with high birth and death rates which are just entering a phase of economic development. Another sort of economic problem rests in the increased proportion of children in the nonproductive age groups during a surge of population growth; sometimes the 1-15 age group includes more than half the population. This can be

expected where deaths decline sharply in response to modern health measures.

#### FIELD TRIALS OF METHODS OF CONTRACEPTION

Well over a half of the world population is found in countries with large populations, an agrarian economy and such density of inhabitants that increased food production is problematical. These countries are engaged in programs of industrial, economic, and agricultural development designed to produce resources sufficient for more people, and for better care of them. Production must forge ahead of reproduction if national development is to follow.

Death rates in Japan and Ceylon declined after World War II, from over 20 per thousand to about 10 per thousand, largely because of improved public health practices. The numbers of people in these countries have increased alarmingly. Where the demographic gap is large, a reduction of birth rates in this decade by even a few points will have a greater long term value than a much greater decrease 10 or 20 years from now, because of the geometrical progression in rate of population increase. (2)

The practical need is to use presently available methods and materials in nationwide family planning rather than to wait for better methods presumably to be had from future research. Whether or not existing methods will produce a gainful result is to be determined by field trials applied to general populations in countries such as India. This is a research problem to which the methods of epidemiology are particularly suited. Social and cultural factors enter into success of such programs and need to be evaluated along with biologic considerations. Such studies are a necessary prerequisite to administrative organization of a countrywide approach.

*Acceptance.* The first consideration is a contraceptive method acceptable to the people which fits their habits, beliefs, and facilities. A method that gives 90 per cent protection against pregnancy is of little value on a population basis if



only used by 10 per cent of the people; the net result is a 9 per cent decline in birth rates. A method only 50 per cent effective but used by 40 per cent of the people will give a 20 per cent decline. Statistical refinements aside, the broad general effect is obtained by multiplying biological efficiency by acceptance. Acceptance is therefore as important a consideration as biological efficiency in evaluating a contraceptive method. The conditions influencing acceptance are variously cultural, social, and administrative.

Field workers from the same culture as the population to be studied are of decided advantage in establishing rapport and understanding. Our experience leads to no general agreement on the qualifications of field workers who are to present family planning methods. Both men and women have been used. Trial has been made of health educators, social workers, public health nurses, and school teachers; of village level workers as used in the Indian Community Development Projects; and of intelligent persons provided with a brief training in village work and the specific problem but with no professional background. Single persons, married persons, and married couples have been employed. In general, older persons tend to generate more confidence and authority, particularly if they have children of their own. There are administrative advantages in having a married couple especially when workers are stationed permanently in a village. There are also disadvantages; rarely do the two have equal capabilities. In general the choice rests not so much on specific training as on aptitude which is hard to predict.

The innate characteristics of a contraceptive measure largely determine its acceptance. People are averse to something which is a nuisance, particularly under the circumstances where a contraceptive is used. People of the Punjab where we have worked commonly express a preference for oral methods, particularly a pill or tablet to be taken once a month or better every six months, or lacking that an injection. No such preparation is known. To take a pill once a day for the major part

of the intermenstrual period would doubtless prove too much trouble for the ordinary villager. That was the experience in programs of chemoprophylaxis against malaria in military practice, and in use of vitamins. Indian practitioners of Ayurvedic medicine advertise powerful pills and potions which are popular, but extravagant claims are common. One Vaidya said that one of his pills would prevent conception for a year, two taken together would prevent conception for two years and three would make a woman permanently sterile. Although most village people discount such claims, they are accustomed to think of and demand agents of dramatic effectiveness. It was also found that village women have difficulty in keeping track of dates for the rhythm method of contraception. A general desire for a preventive measure directly related to the act of intercourse favors vaginal methods. Some few prefer sterilization once the desired family is attained; others, especially in Japan, prefer to take the risk of pregnancy and then resort to abortion.

Even among the most primitive cultures esthetic requirements influence acceptability of a contraceptive method. With a choice available, decision is influenced by features well recognized by advertising experts such as neatness of package, ease in use, and absence of what might be termed messiness. These matters often outweigh the practical criteria of efficiency.

Village women do not have bathrooms with running water to permit douching in privacy. A practical problem is to find a place to store materials used. A classic story in India is of a family planning enthusiast who visited a home to find a child of the family using a diaphragm as a toy cup. One of our village women hid her contraceptive materials under a pile of peanuts.

A source of supply must be readily available, if materials are to be used widely and consistently by village people, and yet assure that they can be procured casually and in reasonable privacy. The means of distribution should reach even isolated communities.

Poverty is extreme in most areas where the population problem is greatest. A method must be sufficiently inexpensive for use by the poorest people. Even with government subsidy, costs are a consideration because of the numbers involved.

Methods used must be free from side effects; even mild local irritation leads to strenuous objection. Men particularly object to anything interfering with normal sexual intercourse.

Keeping qualities under adverse climatic conditions are an important consideration in the tropics. Rubber goods deteriorate from heat, and chemical products develop fungus growth or liquify because of the high humidity.

*Biological Efficiency.* Unless a product has demonstrated efficiency in interrupting conception there is no point in trying to get people to use it. No preventive measure is free from failures. Too many failures early in a program may discredit all methods, and undue numbers thereafter will have the expected result that people will not continue a method which clearly does not work.

The primary value of a method is determined under controlled laboratory conditions, mainly through ability to immobilize sperm and the lack of toxicity and other undesirable physical characteristics. The next step is to test the method clinically. Modifications in pregnancy rates of patients are observed and the safety of the method evaluated. A fair estimate of biological efficiency and some idea of acceptability is to be had. Test subjects ordinarily are not representative of the general population; clinic patients usually have more incentive to cooperate than do people from the general population.

The final test of efficiency and acceptance is through field trials under conditions typical of those where the method is to be used. People differ in the ease with which they learn to use a specific method. An initial reluctance or antipathy or plain lack of understanding commonly results in carelessness in following instructions. The simpler the method the better suited it is to public health use in family planning; there will be less error in application.

## SUMMARY

The increasing population resulting from the difference between rapidly declining death rates and more stable birth rates is a critical problem in large areas of the world today. Problems of human reproduction are complex and require study by a variety of disciplines. The epidemiologic method is suited to field research in population dynamics. The information from such studies may be expected to provide the facts necessary for operational programs of family planning which are logically a responsibility of official agencies of public health.

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## SOME DIRECTIONS FOR RESEARCH ON FERTILITY CONTROL

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### INTRODUCTION

RECENT rapid declines in mortality in some of the economically underdeveloped areas and the imminence of such declines in others have provoked considerable concern over the problem of "overpopulation." On the whole, demographers have tended to view such trends with alarm and to stress fertility limitation as a solution. Economists tend to take a more optimistic outlook and to stress economic development as a solution. Both sides, if pressed, usually agree that economic development and fertility reduction are two desirable facets of a general program of change in selected areas. Indeed, there are increasing indications that leaders of the underdeveloped areas themselves are beginning to think in terms of a joining of such programs.

The present paper deals only with the fertility aspect, on the assumption that controlled fertility can be a useful aspect of national planning. It concentrates, moreover, on those aspects of research which might provide specific and practical suggestions for programs of fertility control. The paper is divided into two major sections, the first dealing with problems relating to groups of power and influence in underdeveloped areas; the second with problems relating to the general population in such areas.

<sup>1</sup> From Cornell University. This essay is a revised version of a memorandum originally commissioned by the Committee on Preventive Medicine and Social Science Research. The Committee has been established by the Social Science Research Council to define and develop areas of mutual interest to public health and social science. The Committee and the writer recognize that efforts to limit population represent only one of many possible approaches to the complex problem of improving the balance between population, health, and means of subsistence in certain regions of the world. Following the Committee's request, the author has addressed the problem of studying fertility dynamics with special attention to particular regions familiar to him. Within this limitation the writer has developed his topic as he saw fit.



PART I: ELITE GROUPS

The social sciences have recently been turning their attention to problems of introducing technical change into underdeveloped areas. In the area of human fertility, the major object of research has been the peasant or lower class worker. Less systematic attention has been paid to the elite groups who either are not defined as targets for the innovations, or are written off as representing "no problem." While a case might be made for such assumptions in certain areas of change, with respect to fertility control the elite are of fundamental importance.

On a high policy level they can block or facilitate social programming, as well as the research itself. Recommendations based on competent investigations of popular attitudes and behavior may go unheeded if they ignore or minimize the personal attitudes of the elite, or their conceptions, erroneous or not, of lower class patterns.

On the village level the elite are strategic in terms of setting personal examples for behavior, or of more directly disseminating new ideas. It is the feeling of the writer that the practical importance of such groups for implementing research and policy is so great that future fertility research in underdeveloped areas must at least in part be directed toward them. The following pages give some of the writer's impressions of the elite's attitudes toward the problems of overpopulation and fertility control, as well as indicating the implications of these for the direction of future research.

FEAR OF THE POLITICAL IMPLICATIONS OF RESEARCH AND  
PROGRAMMING IN FERTILITY CONTROL

*Religious Issues.* In countries where a substantial proportion of the population are members of religious denominations opposed to fertility planning, political leaders are understandably chary about initiating research or programming in this direction. Often, however, middle and upper class leaders

have little understanding of the influence of religion on the lower class person's life. The rigidity of class structures often insulates the upper class individual from accurate perception. Faulty assumptions are then based on (1) the behavior and attitudes of *middle class* groups where the church may extend most of its efforts and obtain the greatest degree of adherence to the letter of its teachings; and (2) the conspicuous ritualistic and ceremonial behavior of the lower class, which is interpreted as indicating close adherence to the tenets of the church.

As regards certain Latin American countries, the available evidence indicates that the actual influence of the church on the daily life of the lower class individual is small indeed. Church attendance is rare, common law unions customary, and superstitious practices at odds with Catholicism are widespread. Further research, documenting more precisely the influence or lack of influence of religion in general on the life of the average citizen in specific countries, would be of the greatest importance in helping policy makers reach politically intelligent decisions. Such studies, it should be pointed out, are relatively innocuous, and can be carried out prior to fertility focussed surveys.

Even where the influence of the church is considerable *in general*, it may not extend to the sphere of family planning. In Puerto Rico, for example, Catholics tend to disagree with the church on this point, and when religious leaders on the Island raised family planning as an issue in a recent election it apparently did them little good. The important point here is that the church's failure on this point might have been predicted from survey findings. If similar results were obtained in other countries, they might pave the way for more cooperation from governments.

Finally, in areas where the reactions of the religious leaders themselves are uncertain, special surveys of the clergy are needed.

*Racial Issues.* A powerful deterrent to social programming



and even to investigations in the area of human fertility is the fear on the part of leaders, especially in colonial areas, that attention to fertility control may be interpreted by the populace as efforts on the part of whites to curtail population growth of people of color—or more sensationally stated, mass sterilization of the Negro. It is the impression of the writer, based on preliminary research in Jamaica and Puerto Rico, that this objection is actually rarely raised by lower class groups, but such must be demonstrated empirically in order to assuage the fears of local officials.

COMPLACENCY DUE TO ASSUMED SIDE-EFFECTS  
OF OTHER INNOVATIONS

A frequently encountered attitude on the part of government officials in underdeveloped areas is one of complacency concerning the population problem. The feeling is that with general economic and educational improvement, "the problem will take care of itself. Although it might take a little longer without direct action, fertility decline is sure to occur, and, consequently, it is not worth risking trouble by initiating a program." How sound is this argument?

Historical demographic studies of nations which have already experienced an Industrial Revolution have indeed shown that fertility declines eventually occur. The demographer, however, is well aware of the "unknowns" surrounding this empirical generalization. The practical question then becomes; *how sophisticated* are local statesmen concerning this historical evidence? Are they aware that closure of the demographic gap has taken upwards of a century in most areas? Are they aware that such occurred when death rates declined relatively slowly, and when world conditions for industrialization were more propitious than currently is the case? Are they aware that the relation between economic development and fertility decline is most obscure, and that in the light of present ignorance of causative factors, there is no guarantee that fertility decline will inevitably follow industrial development?

It would be extremely illuminating to know precisely how much the local statesman knows in reaching his decision to "sit tight."

In the light of the fact that we know so little about the relation between general social change and change in fertility, and in view of the complacent assumptions concerning this relation, research is urgently needed both to verify the general hypothesis, and, especially to specify it.

A. Some public officials harbor the notion that if public housing concentrates on small apartments, small families will be encouraged, and point to the small average family size in their developments. Obviously the selective process alone may account for the correlation, but whether more than this is at work remains speculative. Medical men contend that new emphases on child care through clinic services make women aware of the importance of having few children in order to give adequate care to each. Other nations, however, have introduced such clinical services partly to *encourage* fertility. Sanitary engineers and medical authorities occasionally hold that by reducing infant mortality they are teaching women that they need bear only few children in order to have their desired number. Actually, if they are aware at all of the change, parents may only be pleased at the reduction of wasted effort. Some officials feel that emigration takes care of the population problem. While undoubtedly of importance as a short term expedient, it is by no means certain that such policies have long range salutary consequences. In all such cases both sides have plausible but untested hypotheses. Our general research question then becomes, *which particular social and economic programs, if any, have a depressant effect on fertility?* This question could be answered by "before and after" studies, designed to ascertain attitudes toward family planning, ideal family size and fertility performance before and after introduction of the social change. Such studies could be conducted in a variety of situations to assess the *differential impact* of various programs of change.

B. Assuming that a given program or programs is found to have the desired consequences for fertility, *what precisely about the program has this effect?* If the education of women is found to influence fertility, just what aspect of the educational process is the effective ingredient? Is it merely the raising of aspirations as a result of "general enlightenment"; the influence of the peer culture at school; or ideas derived from specific courses? Such questions too can be answered by "before and after" experimental designs as well as (more crudely) by surveys employing retrospective questions.

C. *What are the unanticipated negative side-effects of social programs?* Not only can we assume that some aspects of social change in underdeveloped areas have no effect on fertility; there is also evidence that other aspects may increase it—a point rarely realized by local administrators. In the case of Jamaica, for example, there is already good reason to believe that, contrary to common belief, the unstability of conjugal unions acts as a depressant on fertility by reducing exposure to conception. Social programs which encourage marriage and stable family relations can, other things being equal, be expected to raise fertility. Again, among certain peoples of Africa, numerous customs have traditionally limited fertility. Periods of sexual abstinence, especially after birth of a child, abortion, and infanticide are examples of birth control practices which are disappearing as a result of modernization.

#### RESEARCH RECOMMENDATIONS

A. Surveys of elite and power groups with respect to knowledge of and attitudes toward the population problem and the means for fertility control

1. Personal attitudes.
2. Opinions concerning knowledge and attitudes of the lower class.
3. Degree of sophistication concerning effects of social programming.

*Method:* Such an investigation could obviously not be under-

taken in the routine survey research fashion. Interviewers would probably have to be high status foreigners, and the interview conducted in an informal, conversational way. After initial soundings on personal attitudes, a useful technique would be to cast the elite figures in the roles of expert consultants. For example, if a questionnaire survey of popular attitudes were planned, a rough draft of the questionnaire could be presented and the following questions asked of the elite respondent:

1. "What important areas have been omitted, and what areas included which you feel could be omitted (i.e., answers to which are obvious)?"

2. "Fill out the questionnaire the way you think the average lower class person would; and/or indicate the distribution of responses you would expect to result from asking the following questions of the lower class population." The procedure could be justified on the grounds that the investigators need to have advance information on what to expect, for purposes of training interviewers and setting up the analysis.

Such studies have several advantages. First, they may flatter the official, capture his interest, and, because of this involvement, help to insure that the research results will be read and taken seriously. Second, we may find that the first target of education concerning population problems should be the elite rather than the general population. Third, such an approach alerts the investigator to include questions in his general survey which may have crucial political relevance, even if of no special academic interest, or even if the investigator feels there is already sufficient information on the matter.<sup>2</sup> This aspect requires some further elaboration.

B. Studies which take as their main hypotheses the assumptions of the elite. We have already outlined the suggested con-

<sup>2</sup> In a Jamaican exploratory survey, no respondents mentioned the race issue, thereby indicating the wastefulness of repeating this question in a larger survey. However, the concern of local officials over this question makes it vital that it be included in subsequent studies in order to prove more conclusively that it is of little significance in lower class motivations.

tent and method of special studies concerning the presumed effects of broader social programs on fertility. The advantages of such studies concern both the researcher and the administrator. For the former they might provide answers to questions which have been treated only speculatively for decades.

For the social planner two practical advantages are present. First, such studies will indicate more precisely which programs and which aspects of these programs can be expected to have the desirable effect, and which will have the undesirable effects. *In countries where there are firm resolutions to make no direct attack on the problem, such information is crucial.* Second, for those programs with positive consequences, some indication of the length of time required for significant effects on fertility can be provided. With such information policy makers are in a better position to weigh the advantages and disadvantages of direct versus indirect action.

C. Studies of Special Elite Groups and Village Level Opinion Leaders. In addition to investigating the beliefs of power groups on the national level, it is obviously of importance to collect data on individuals who are of more direct influence on the lower class. In some areas at least, such groups might serve as the targets for programming, rather than the mass of the population, for obvious economic reasons. This assumes (1) that there are individuals who substantially influence family behavior; (2) that such individuals can be located, and (3) that they can be persuaded to exert their influence in the desired directions. All three of these assumptions are testable, and should be tested prior to any large scale program.

An illuminating illustration of the value of one aspect of such research can be drawn from the work of B. Ryan in Ceylon.<sup>3</sup> A poll of Buddhist priests was taken to ascertain their attitudes toward family planning. It was found that the well educated upper class priests tended to be in favor of birth control, while the poorly educated village priests had no crys-

<sup>3</sup> Ryan, Bryce: *Hinayana Buddhism and Family Planning in Ceylon. In INTER-RELATIONS OF DEMOGRAPHIC, ECONOMIC AND SOCIAL PROBLEMS IN SELECTED UNDER-DEVELOPED AREAS.* New York, Milbank Memorial Fund, 1954.

tallized attitude or were unfavorable. Since the latter can probably be assumed to be opinion leaders on the local level, it is clear that any mass program which did not give special, prior attention to this group (clearly by utilizing the influence of the upper class priests) might be sabotaged. It is not unlikely that uncrystallized attitudes on this subject are typical of much of the local leadership. It therefore becomes of the greatest importance that they be reached earlier than the general populace. *Who "they" are and "how best they are to be reached"* becomes a challenging research problem.

#### PART II: LOWER CLASS FERTILITY PATTERNS

Initially, we shall divide the underdeveloped countries of the world roughly into two broad types strategic for research on human fertility. The first covers countries where the nuclear family is subordinate to wider kinship groups, especially to the families of orientation; the second concerns countries where the nuclear family functions relatively independently of wider groupings.

##### KINSHIP-DOMINATED CULTURES

K. Davis notes that where the nuclear family is subordinated to wider kinship groups, positive consequences for fertility are several. Cost and effort of child care fall on many shoulders, age at marriage can be quite young, and the couple is strongly motivated to have numerous progeny in order to raise their status and strengthen the larger family.<sup>4</sup> Given such a family structure, high fertility becomes psychologically, socially, and economically functional. If this is literally the case, there is little need for further research into motivations concerning high fertility in such areas, since the explanation is quite sufficient to account for it. Moreover, there would be little point in initiating direct programs of change with respect to fertility, since there would be no reason to believe they would be anything but ignored.

<sup>4</sup>Institutional Factors Favoring High Fertility in Underdeveloped Areas. *Eugenics Quarterly*, March, 1955.



It is more probable that the situation in such cultures is not so simple, nor the outlook quite so hopeless. Several types of evidence support this conclusion:

A. There are probably important class differences within any culture with respect to family structure. For example, whereas many writers have maintained that the typical Chinese family has been of the "joint" type, actual surveys have demonstrated that this pattern is rarely found among poor peasants and farm laborers and is essentially typical only of well-to-do peasants and landlords.<sup>5</sup> It might be argued that the joint family is nevertheless the *ideal* which permeates the entire society, while realized by only the upper classes; and that this ideal effectively determines all the other positive fertility attitudes and behavior patterns which are consonant with it. While such may be the case (and it is yet to be demonstrated) it is one thing to have attitudes consistent with family structure and quite another to have them consistent only with family structure ideals. Should the latter be true, it becomes a case of showing the peasant that high fertility works to his actual disadvantage, a matter perhaps not possible where the joint family exists in practice.

B. Even where the joint family exists, a point of diminishing returns can be assumed to occur with respect to the benefits of progeny. Even if we assume that this point occurred at the maximum effective fertility in earlier times, modern reduction of infant mortality in underdeveloped areas might be expected to be effecting a surplus of survivors economically dysfunctional even to the joint family.

C. If the explanation concerning the kinship-dominated cultures be true, then we would expect that women would welcome large numbers of children, especially because children are their principal occupation. But what little evidence is available on this point would tend to negate the hypothesis.

*Research Implications.* In view of the above factors, fur-

<sup>5</sup> Lang, Olga: *CHINESE FAMILY AND SOCIETY*. New Haven, Yale University Press, 1945, Chap. xii.

ther research in kinship-dominated cultures seems indicated.

A. Cross-cultural studies designed to discover the distribution of different types of family structure and family structure ideals among the various classes of the population. At the same time, the relation of family structure and family structure ideals to the number of children desired could be investigated.

B. Such studies could be coupled with investigations aimed at discovering the average net economic gain or loss involved in each addition to the family for the various classes and family structure types in the population. Such factual data could be compared with the subjects' *perceptions* of net cost or gain to determine the extent, if any, of the discrepancies.<sup>6</sup> Obviously, too, non-economic gains and costs must be investigated, but these present greater methodological problems.

C. In areas where infant mortality has been sharply curtailed, to what extent is the average person aware of this? If aware in general, does he feel it has anything to do with *his* family and the number of children he desires to have?

#### SOCIETIES CHARACTERIZED BY DOMINANCE OF THE NUCLEAR FAMILY

In societies where the larger kinship group fails to absorb much of the burden of child rearing and support there would seem to be much less reason for having large families. However, as we shall illustrate below, prevalence of nuclear-type family structure alone does not seem sufficient to guarantee the practice of family limitation. At least two hypotheses might be advanced to account for this: First, in the relative absence of strong social structural supports for high fertility, the sex drive is sufficient to guarantee it, unless very powerful counter forces are present. With or without society's help, nature will tend to take its course. (Presumably however, so-

<sup>6</sup> Lower class populations in underdeveloped areas commonly voice the view that children are the capital or the social security of the poor. It is of some importance to discover whether these are rationalizations which are not really believed, or beliefs sincerely felt to be true. In either event, the extent to which the belief has a basis in fact must be ascertained.



cieties where high fertility is relatively unsupported by culture are more *vulnerable* to change in the direction of low fertility if the proper counter forces come into being.) We may find in such societies that the characteristic attitude toward high fertility is better described as *indifference* or *ambivalence* than as positive concern. In the light of biological factors, however, such attitudes can have the same consequences for fertility as do positive attitudes.

Second, where interest in low fertility becomes relatively strong, curtailment of fertility may not ensue because of social organizational impediments or because of explicit objections to known techniques of contraception. Note that the term "*relatively strong*" is used. We can assume that if motivations were sufficiently great, birth control would be practiced regardless of objections.

We can now classify societies, or classes within societies, more meaningfully into those which *directly* facilitate and encourage high fertility and those which do not. The former category has already been discussed under the designation of (1) "kinship-dominated societies." The latter category can be divided into three further types: (2) Societies where indifference or ambivalence concerning family size vitiates use of birth control; (3) Those in which motivation is relatively favorable to small family size, but where social organization factors block the realization of these ideals; (4) those in which only resistances to known methods of contraception inhibit the use of birth control.<sup>7</sup> Theoretically, the difficulty of introducing contraceptive habits would decline as we move toward the fourth type. For example, we would expect that an oral contraceptive would meet with least initial success in type one, most success in type four. Let us now move to a more detailed consideration of types two, three and four.

*Type 2: Ambivalent Toward Family Size.* We may illustrate this type by examples drawn from Puerto Rico, an area cur-

<sup>7</sup> Whether or not societies can actually be so typed has yet to be demonstrated. Probably elements of each type are present in varying degrees in all societies.

rently undergoing economic development. The lower class family in Puerto Rico, landless and living on the edge of subsistence, is one where the dominance of the family of orientation is absent in the newly formed nuclear family. The ideal is for a couple to live apart from their families; and the breaking of parental authority and its transfer to the husband is most dramatically evident in the lower class elopement pattern where the male "steals" the female from her home to live with him in consensual union. Conspicuous by its absence is the joint or stem family, where the strength and prestige of a family depends to a large extent upon its size. Nor does religion or folk culture provide any basis for ancestor worship. The old, while respected, are not venerated. Thus, the large family is of no particular advantage economically. What, then, is the attitude toward family size?

There is a revealing Puerto Rican proverb which expresses an important aspect of the attitude toward family size: "Children are a sore sent by God." In these few words the ideas of both blessing and curse are contained, as well as a sense of resignation at the presence of a cross which all must bear. Fortunately, our evidence goes beyond the proverbial.

When lower class individuals are asked what number of children they consider ideal, or what number they would like to have "if they had it to do all over again" the replies are seldom in terms of more than three children, and good reasons are given to explain why three are sufficient. The large discrepancy between this number and the number actually borne by this class of Puerto Rican women led the writer and his colleagues to investigate aspects of conjugal interaction which might be frustrating the realization of such ideals. Such investigations have yielded promising results, but certain other evidence has raised questions about the meaning of a stated preference for three children.

As an illustration let us take the following question, asked of about 900 mothers: "Would you agree or disagree with the statement, 'In general, the *more* children a family has, the

happier it is?' " A half hour later in the interview the question was asked in this fashion: "Would you agree or disagree with the statement, 'In general, the *fewer* children a family has the happier it is?'" A third of the sample agree or disagreed with both forms of the question. When we examine the results of four such items, we find that two-thirds of the sample was inconsistent on one or more questions. Thus, we have reason to believe that earlier assumptions of small family orientation of the Puerto Rican were oversimplified, and that simply stated ideal size preferences may conceal a considerable degree of ambivalence or indifference with regard to this topic.

How can we investigate the nature of this ambivalence? Let us make two broad assumptions: First, ambivalence stems at least in part from competing norms and from the effects on motivation of different aspects of the social structure. Some of these norms and structures have the effect of motivating the individual in one direction, and some in another. Second, the nature of the expressed attitude may at any one time depend upon the particular reference group which is salient in the respondent's mind at the moment.

*Bio-Social Factors.* Since women must bear children, we can assume certain intrinsic disadvantages for them in having large families—pain, risk of good health, loss of beauty, trouble of rearing, etc. Women the world over are exposed to these same intrinsic disadvantages of the child-bearing function, but these may be mitigated to varying extents by cultural redefinition and reward. (The pregnant woman may be considered beautiful and even the pain of childbirth may be redefined as pleasurable to some extent.) It becomes important therefore, to investigate in various cultures *the degree to which* the factors we have termed intrinsically disadvantageous are so considered by women. This may turn out to be one of the areas of ambivalence—for example the conflict which may result from the lack of correspondence between literal pain and trouble (if there be such things) and their redefinition by the culture as "gifts from God." It should be noted in passing that such

factors impinge on the male only insofar as he "sympathizes" with his mate—another area which bears investigation.

*Social Structural Factors.* Concentrating on the family, we may choose here for illustration two extremes—highly stable family structure and highly unstable family structure. With regard to the former, though perhaps more properly placed in a previous section, we may consider the case of societies with patrilineal descent and patrilocal residence. Here, on the one hand, children contribute much less to the woman's family than to the husband's. On the other hand, the very insecurity of the low status female newly thrust into a household of non-relatives may motivate her to consolidate and raise her status by producing a large family.

As regards unstable family structure, such as is found in the British West Indies, the tenuousness of the conjugal bond may make females reluctant to have children by a partner who may disappear soon after a pregnancy occurs; but by the same token, women interested in stabilizing their unions may be motivated to have a number of children and thereby hold the male. In both of these illustrations the same structure can effect contrary motivations.

*Differential Norms and Reference Groups.* Social class, age, sex, and marital status are factors used for stratification in all societies, and, usually, we find differential norms and values associated with the various strata. Often such characteristics are so combined in any one individual as to produce conflicting norms; or, while not a member of a given class or group, an individual may aspire to be and accept its norms as more desirable than those of his own class. Thus, a lower class woman living in consensual union may feel that having a small family is the prerogative of the married and well-to-do; but whether this causes her to adopt such patterns or spurn them depends upon her attitude toward that status and class, and her aspirations regarding them.

The same individual may have a number of conflicting attitudes, the salience of any one at any one time depending on

the situation. In the presence of a middle class interviewer the respondent may voice attitudes she feels more acceptable to that class; in the presence of her husband still another attitude might be voiced; in the presence of her peers still another. Ryan's observations in Sinhalese women are interesting in this connection: "The sample of mothers . . . offered evidence that many women are torn between the community valuation of the large family and a personal desire for restricted numbers . . . It was sharply evident to the interviewers that infinite numbers of children were an unqualified blessing in situations where several women were present."<sup>8</sup>

*Research Implications.* In the light of present knowledge, it would be fallacious to assume that a privately held attitude is more "real" than a publicly held one. There is no reason to believe that one attitude has less consequences for behavior than the other. Indeed, since the number of one's children is a public phenomenon, it might be argued that the "public" attitude is more significant for fertility than the "private" one. Or even in the event that responses are given in terms of a middle class norm, this is by no means an indication that the data are worthless. If an individual is aspiring to middle class status or even believes in the superiority of the middle class norm, the attitude may have consequences for behavior. The important thing is to know more precisely the nature of the attitude. More specifically, where a number of different attitudes toward the same phenomenon are held:

Under what circumstances is each attitude dominant; and

Is there any hierarchy of attitudes: That is, in terms of self evaluation and actual behavior, are reference groups arranged in any order of importance?

In order to answer such questions, a more varied methodology than the standard questionnaire approach is indicated.

A. Interviews stressing *confrontation of discrepancies*. By

<sup>8</sup> Ryan, Bryce: Institutional Factors in Sinhalese Fertility. *Milbank Memorial Fund Quarterly*, October, 1952, xxx, No. 4, p. 359.

means of repeated interviews and/or persistent and varied questioning within the same interview, discrepant attitudes can first be revealed. Then the respondent can be confronted with the discrepancies and asked to account for them. Ideally, half the interviews should be conducted by middle class personnel, the other half by lower class, to ascertain first whether *different* attitudes are elicited, and second, whether the *salience* of the attitude varies by interviewer type.

B. *Contrived interaction* on the topic of family size in different situations. Here the investigator could place the respondent in different interactional situations and observe the results. For example, hypothetical problems revolving around family size could be given to an individual—in private, in the presence of the spouse, in a group of peers, and in a group of married men and women. In sampling, it would be desirable to have one set of subjects who would participate in all the different situations and to have other *matched* groups which are exposed to only one type of situation. The latter system would be in order to assess the possible effects of “contamination” as a result of repeated queries on the same topic.

C. *Role Playing Techniques*. Here the investigator could play various roles and have the respondent interact as she would typically in such situations, and/or the respondent would play various roles designated by the interviewer.

D. All the above situations are contrived and “artificial” to varying extents. It would be important also to have data from *natural situations*. An anthropologist (or preferably a male and female team) could collect such data by living in the community or communities under study. It would be desirable to have such investigators reside in the community both prior to the entrance of the other field workers and for a period subsequent to their departure.

Such studies would reveal the *content* of ambivalent attitudes, making it possible to direct educational efforts in the proper direction; but even more important, they might indicate the social *circumstances* under which educational efforts would



achieve maximum success—for example, in mixed groups as opposed to husband and wife in private, etc.

*Type 3: Social Organizational Obstructions.* Let us now assume that the scales are tipped in the direction of motivations for small families. In order for such motivations to be activated, knowledge of the means for curtailing fertility must be known, and, a certain amount of cooperation between the mating couple is required. The social organization may set up blocks in both instances.

The most obvious case occurs where the class structure is particularly rigid, providing few channels of communication between the upper and lower classes. It is rarely if ever the case that the lower class knows of no birth control methods, but rather that the range of choice is more limited than that of the upper class, because of lack of information. At least two avenues of investigation are suggested:

First, regardless of the rigidity of the class structure, *some* lower class individuals articulate with the upper class. Moreover, other individuals with intermediate status may mediate between the classes. As previously suggested, it becomes important to locate such individuals and determine their potential (both in terms of their communications position and their attitudes) as “carriers” of information. An important aspect here is that in addition to being strategically located, such individuals are more accustomed to dealing with professionals and officials than the average lower class individual. In other words, they are easier to work with.

Second, aspects of the communications system other than the interpersonal need be investigated. Assuming fairly high levels of illiteracy, what other media are present in a society which could be utilized for spreading knowledge? Often the radio is the first luxury (indeed, superceding many “necessities”) a family will purchase, and group listening is a common phenomenon. Moreover, the definition of permissible content for radio waves in such societies is often considerably more liberal than in our own. Finally, troubadour-like singing pat-

terms are another common means of communication which might bear investigation.<sup>9</sup>

Class however, is not the only stratification device which impedes communication. Stratification along sex lines is another block common to most underdeveloped areas. Where the status of the female is low, we often find the woman's life so carefully circumscribed that she is cut off from the "normal" flow of communications. This is not only true of formal education, which means her level of sophistication will be low and her ability to interpret mass media limited, but also interpersonal influences are restricted by means of such techniques as purdah, seclusion, and chaperonage. Moreover, in such societies sexual matters are felt to be more the prerogative of the male, while the feminine ideal is one of modesty. Thus information seeking in the sexual sphere is discouraged. Finally, sex stratification has important consequences for communication between husband and wife. The statuses of male and female are so divergent, and socialization of the sexes is so different, that males and females at marriage may find it difficult to communicate successfully. Motivations which may be held in common are not realized because of erroneous assumptions about the other, and knowledge of birth control methods may not be shared.

Obviously we need to know more about this area, but if the situation is as we have described it, can anything be done other than to change the entire social structure? Two avenues which might short-cut such drastic change might be suggested for further research:

First, to what extent would *general* marital and pre-marital counseling stressing the importance of discussion of family problems affect the sexual sphere? Could extension workers,

<sup>9</sup> The suggestion has been made that for the British West Indies, the calypso song might be an effective vehicle for spreading information of at least a general sort on family planning. The idea may not be as far fetched as it sounds, and at least can serve us as a good illustration. It is feasible since explicitly sexual topics are among the culturally permissible themes for such songs. This is to be contrasted with Puerto Rican folk singing, where such themes are rare, and, therefore, where use of such a medium for the spread of information in the family planning sphere would be limited.

home economists, nurses, and social workers, given some training in this area have any effect on patterns of conjugal interaction?

Second, which contraceptive methods require the least degree of communication and cooperation for their effective use? For example we suspect that one of the factors accounting for the unusual popularity of female sterilization in Puerto Rico is the fact that only one decision is required and further communication and cooperation is unnecessary. An oral tablet, should such be developed, which requires no connection with the sexual act would also seem promising. But within the existing and more traditional methods, what is the priority list in different cultures as regards communication? This carries us to our final type.

*Type 4: Resistances to Known Methods of Birth Control.* Even where the situation is favorable to family planning on the other points discussed, there may be strong objection to the known methods. Here, of course, the problem is mixed with knowledge, for objections are usually based either on incomplete knowledge of the range of methods, or on misconceptions about known methods. In Jamaica, a high proportion of women appear to know only abortive methods, and are only vaguely aware of other techniques. The unfavorable attitude toward abortion tends in many instances to be spread to birth control in general.<sup>10</sup> The wide use of the condom as a prophylactic measure too, has affected adversely the attitude toward this method as a contraceptive. Both men and women in Puerto Rico and Jamaica often feel its use degrades an "honest woman."

Other common fears are that use of the condom or the diaphragm may cause dread diseases, general loss of health, or that these devices may stay inside the woman and be impossible to extricate. Such objections may represent fears of introducing technology into a sphere of behavior ordinarily free of

<sup>10</sup> Organized opposition to birth control usually capitalizes on this tendency by linking birth control with abortive techniques.

it, or may be eagerly believed rationalizations concealing a basic lack of concern about fertility. At any rate it would seem that such prejudices would be the most amenable to educational efforts, if a basic concern over family size were present.

More problematic are objections to female methods because they rob the male of authority in the sexual sphere, and to male methods because they rob him of his virility.

In the light of the various objections outlined above, it might be useful to direct research toward the efficacy of certain methods such as coitus interruptus, douche and sterilization, which are not *en vogue* among the sophisticated, but which might prove effective for the general population in underdeveloped areas. The sophisticated object to these methods as either too drastic (sterilization and withdrawal) or relatively ineffective (douche and withdrawal). With regard to the first point we should note that what is drastic in one culture may not appear so in another. Puerto Rican women who decide they have had enough children, tend to regard a swift, permanent, safe (done by a physician), and prestigious operation as less "drastic" than the persistent, risky, harmful use of contraceptives which require the continual permission and cooperation of their spouses. As regards withdrawal, not only are the usual objections to mechanical and chemical measures seldom raised, but the method is widely known and available gratis to all. Finally, the douche draws its advantages in a manner comparable to the disadvantages of the condom—it is associated with cleanliness and health.

To those who would complain of the intrinsic ineffectiveness of the latter two methods, it can only be said that a relatively inefficient method which is used will prove more valuable than an efficient one which is not. A question which merits serious study is the long run effect on fertility of encouraging wider and more persistent use of relatively inefficient methods which have cultural approval, as opposed to introducing new and initially objectionable methods which have high intrinsic efficiency. An experimental design wherein matched samples are

given the two different treatments and observed over time would be most instructive.<sup>11</sup>

#### CONCLUDING REMARKS

The imminence of rapid mortality declines in major underdeveloped regions suggests the need for attacking the problem of fertility reduction on a large scale research basis in the immediate future. There are other reasons, however. Should the "oral pill" be developed in the next ten years, it is of great importance that its dissemination be carried out in a systematic rather than haphazard fashion. There is no guarantee that the pill will "sell itself," and careful groundwork research should precede its distribution to insure a system of introduction which will produce the best results.

Another area where time is a factor concerns those countries which are beginning to change from uncontrolled to controlled fertility. Long range observational studies which follow the actual process of change are much superior to *ex post facto* studies where the investigators are confronted with a fait accompli and compelled to look backwards to account for it. Japan is a good example of an area which *could have* been studied in this fashion. A number of other countries are beginning to experience radical economic changes, and it is important that their fertility behavior be watched *during the process*.

Perhaps the most basic recommendation of all concerns the *coordination and focussing of future studies of fertility on an international level*. Currently, substantial projects are underway in the United States, the West Indies, Japan, and India, and others are prospected. There has been no systematic at-

<sup>11</sup> Another question, relative here, is the effect of contraceptive failure. It may be argued that the use of intrinsically ineffective methods will, upon failure, effect a loss of confidence in all methods, and a consequent abandonment of birth control. On the other hand it might be argued that the most important step is getting families to practice any method of birth control. This reasoning would imply that the logical first step is to introduce a culturally approved method, albeit intrinsically ineffective. Though failure may occur, the pattern of use is established, and more effective methods will be sought out. In this connection it is interesting that in Japan resort to abortion typically occurs after failure of contraception; in Puerto Rico, sterilization.

tempt to coordinate such studies, overlap being incidental or coincidental. The risks taken in such independent efforts are greater than duplication of effort—they involve rather the danger of providing non-comparable data for different countries, preventing or greatly slowing down the creation of a more basic and general theory. We cannot afford to rest on the easy assumption that each society's problems are unique and consequently must be studied in a unique fashion. The major bent of international research should be toward the discovery of similarities rather than differences among societies. Differences can be found too easily—the basic similarities require greater effort to be uncovered, yet are of greater importance both from a practical (economic) and purely scientific point of view.

The efforts of official agencies at bringing together scholars of various countries in this connection has been essentially negligible. Such official conferences either ignore the problem because of its delicacy or bury it in a mass of technically oriented demography. Improved methods of collection and analysis of vital statistics and census data are of unquestionable value, but they do not go far in solving the kind of problems outlined here.

Investigation has progressed far enough so that cross-cultural research is feasible. Our methodological tools and substantive hypotheses have been sufficiently sharpened at least to the extent where, with some effort, we can focus our research projects more meaningfully on an international scale.



## FERTILITY TRENDS AND DIFFERENTIALS AMONG NONWHITES IN THE UNITED STATES

CLYDE V. KISER<sup>1</sup>

NEARLY sixteen million people or slightly over one-tenth of the population of the United States were classified by the 1950 Census as nonwhite. The great majority of these, nearly 96 per cent, were Negroes. The American Indians formed the next largest group, but these numbered only a little over one-third of a million and comprised only 2.2 per cent of the nonwhites.

The Japanese and the Chinese were in third and fourth places, respectively, but each group had less than 1 per cent of the total nonwhite population. The "all other" group also comprised less than 1 per cent of the nonwhites and included Filipinos, Koreans, East Indians, and other nonwhite groups.

Thus, whereas the present paper relates to trends and differentials in the fertility of nonwhites in the United States it actually deals primarily with Negroes. The paper relates to nonwhites as a whole because in most instances the data are not available for the several subdivisions separately. In a few instances, as in data from the 1940 and 1910 Censuses, the materials relate to Negroes rather than to nonwhites.

Although recent data are not available for each of the nonwhite groups separately, it is probable that each nonwhite group mentioned above is more fertile than the whites. In fact, as indicated in Table 1, the cumulative fertility rates of the nonwhites other than Negroes surpassed those of Negroes at certain ages within urban and rural-nonfarm areas and

<sup>1</sup> From the Milbank Memorial Fund. For a briefer version of this paper, see: Kiser, Clyde V.: *Fertility Characteristics of the Nonwhite Population in the United States*. A paper in *Bulletin de l'Institut International de Statistique*, Tome 36, Actes de la 30<sup>e</sup> session de l'Institut International de Statistique, Stockholm, 1957, Section démographique. (In press.)

The author utilizes some of the data that are in a forthcoming 1950 Census Monograph, Grabill, W. H.; Kiser, C. V.; and Whelpton, P. K.: *THE FERTILITY OF AMERICAN WOMEN*. New York, John Wiley & Sons, 1958. He emphasizes that his co-authors of the monograph are in no way responsible for any errors of fact or interpretation in the present paper.

RESIDENCE AND RACE-NATIVITY	15-19	20-24	25-29	30-34	35-39	40-44	45-49
<i>United States</i>							
Native White	547	1,029	1,628	2,040	2,223	2,335	2,457
Foreign-Born White	661	998	1,401	1,839	2,128	2,273	2,452
Negro	921	1,474	1,931	2,250	2,450	2,619	2,767
Other Races	a	1,459	1,965	2,829	3,505	4,173	4,171
<i>Urban</i>							
Native White	501	910	1,460	1,824	1,937	2,001	2,096
Foreign-Born White	554	934	1,325	1,746	2,028	2,183	2,369
Negro	901	1,327	1,639	1,797	1,868	2,040	2,250
Other Races	a	1,061	1,373	2,126	2,696	3,115	3,158
<i>Rural Nonfarm</i>							
Native White	610	1,218	1,860	2,327	2,542	2,661	2,773
Foreign-Born White	a	1,247	1,730	2,190	2,569	2,665	2,808
Negro	967	1,678	2,472	2,895	3,202	3,236	3,093
Other Races	a	1,806	2,433	3,375	3,960	4,699	a
<i>Rural Farm</i>							
Native White	586	1,305	2,171	2,734	3,136	3,408	3,587
Foreign-Born White	a	1,222	1,831	2,573	3,251	3,259	3,460
Negro	931	1,906	2,950	3,977	4,530	4,701	4,840
Other Races	a	a	2,892	3,760	a	a	a

Table 1. Children ever born per 1,000 ever-married women, by race-nativity, residence, and age. United States, 1950.<sup>1</sup>

<sup>1</sup> Source: Adapted from U. S. Bureau of the Census: *FERTILITY*, Special Report, P-E No. 5C, Washington, U. S. Government Printing Office, 1955, Table 12.

a Ratio is not shown because base is under 4,000.

were only slightly lower than those of Negroes in rural-farm areas. Special studies have indicated relatively high fertility of the various groups. In a recent study, for instance, Hadley estimated an average annual birth rate of about 32 per 1,000 population among American Indians in the United States for the period 1949-1953 inclusive.<sup>2</sup> The average rate for whites during this period was about 24.

### TRENDS IN FERTILITY

The central fact regarding trends in the fertility of nonwhites in the United States is the large increase that has occurred in recent years. Figure 1, based on Table 2, presents crude birth rates per 1,000 population by color for the United States for

<sup>2</sup> Hadley, J. Nixon: *The Demography of the American Indians. The Annals of the American Academy of Political and Social Science*, May, 1957, 311, p. 29.

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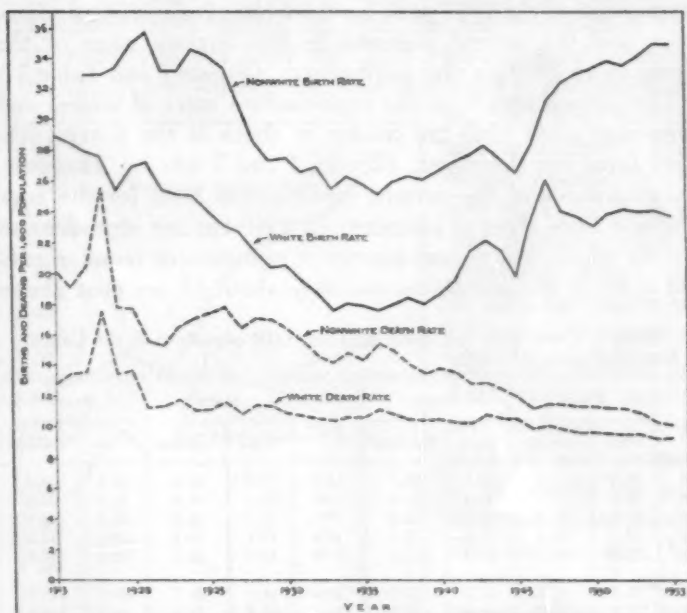


Fig. 1. Crude birth and death rates per 1,000 population by color. United States, 1915-1955. (See Table 2.)

the period 1917-1955. The rates are from the National Office of Vital Statistics and they were adjusted for under-registration. The rates for whites and nonwhites were remarkably parallel until 1947. In most of the thirty years during 1917-1947, the crude birth rate for the nonwhites was about six points above that for the whites. However, whereas the birth rate for whites culminated in a conspicuous peak in 1947, that for nonwhites continued to rise. Only twice during 1946-1955 did the crude birth rate for the nonwhites fail to be higher than that of the preceding year. In 1955, the crude birth rate per 1,000 population was about 35 for nonwhites as compared with 24 for whites.

When the annual births are related to women of childbearing age (15-44) the nonwhites exhibit year by year increases during the 1946-1955 period without exception. In this case the

prominence of the 1947 peak for the whites is diminished somewhat and the annual increases in the fertility rates of the whites since 1950 are also emphasized. (Figure 2 and Table 3.)

The general trends of the reproduction rates of whites and nonwhites since 1940 are similar to those of the general fertility rates just described. (Figure 3 and Table 3.) However, the magnitude of the current reproduction rates for the nonwhites is little short of amazing. In 1940 the net reproduction rate for whites was almost exactly at replacement requirements and that for the nonwhites was only about 21 per cent above

Table 2. Crude birth and death rates per 1,000 population in the United States, by color, 1915-1955.<sup>1</sup>

YEAR	BIRTH		DEATH		YEAR	BIRTH		DEATH	
	White	Nonwhite	White	Nonwhite		White	Nonwhite	White	Nonwhite
1915	28.9		12.9	20.2	1935	17.9	25.8	10.6	14.3
1916	28.5		13.4	19.1	1936	17.6	25.1	11.1	15.4
1917	27.9	32.9	13.5	20.4	1937	17.9	26.0	10.8	14.9
1918	27.6	33.0	17.5	25.6	1938	18.4	26.3	10.3	14.0
1919	25.3	32.4	12.4	17.9	1939	18.0	26.1	10.3	13.5
1920	26.9	35.0	12.6	17.7	1940	18.6	26.7	10.4	13.8
1921	27.3	35.8	11.1	15.5	1941	19.5	27.3	10.2	13.5
1922	25.4	33.2	11.3	15.2	1942	21.5	27.7	10.1	12.7
1923	25.2	33.2	11.7	16.5	1943	22.1	28.3	10.7	12.8
1924	25.1	34.6	11.0	17.1	1944	20.5	27.4	10.4	12.4
1925	24.1	34.2	11.1	17.4	1945	19.7	26.5	10.4	11.9
1926	23.1	33.4	11.6	17.8	1946	23.6	28.4	9.8	11.1
1927	22.7	31.1	10.8	16.4	1947	26.1	31.2	9.9	11.4
1928	21.5	28.5	11.4	17.1	1948	24.0	32.4	9.7	11.4
1929	20.5	27.3	11.3	16.9	1949	23.6	33.0	9.5	11.2
1930	20.6	27.5	10.8	16.3	1950	23.0	33.3	9.5	11.2
1931	19.5	26.6	10.6	15.5	1951	23.9	33.8	9.5	11.1
1932	18.7	26.9	10.5	14.5	1952	24.1	33.6	9.4	11.0
1933	17.6	25.5	10.3	14.1	1953	24.0	34.1	9.4	10.8
1934	18.1	26.3	10.6	14.8	1954	24.1	34.9	9.1	10.1
					1955	23.8	34.7	9.2	10.0

<sup>1</sup> The birth rates were adjusted for underregistration and for births in States not in birth registration area prior to 1933. The birth rates for 1917-19 and 1941-46 are based on population including Armed Forces overseas.

The death rates are not strictly comparable with the birth rates in that they were not adjusted for underregistration and neither were they adjusted for States not in the death registration area prior to 1933. Historically, however, the registration of deaths has been more complete than that of births and both birth and death registration areas have included all the States since 1933.

See United States Department of Health, Education, and Welfare: *VITAL STATISTICS OF THE UNITED STATES, 1955*, Vol. 1, Washington, Government Printing Office, 1957, Tables AB and BH.

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replacement requirements. In 1955, the net reproduction rate of the nonwhites was 2,097 per 1,000 females. In other words, if the age-specific fertility and mortality rates of the nonwhites

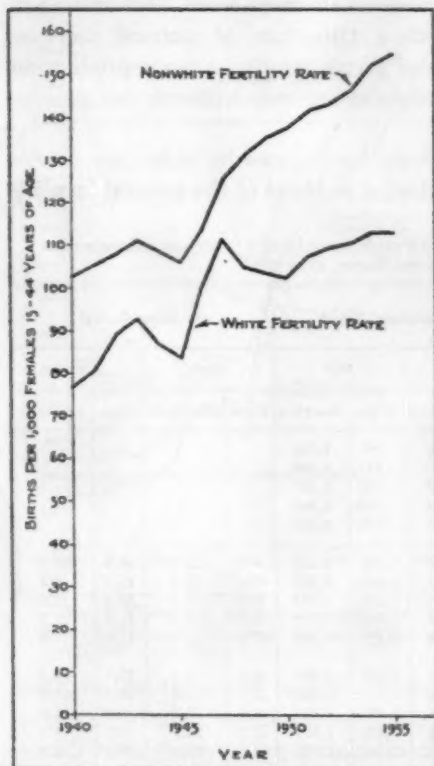


Fig. 2. General fertility rates: Annual births per 1,000 females, by color. United States, 1940-1955. (See Table 3.)

occurred in the United States since 1940, especially among the nonwhites.

The same type of situation is also pointed up by the intrinsic birth and death rates for the years 1940-1955. (Figure 4 and Table 3.) In 1940 the intrinsic birth and death rates for the

in 1955 were continued indefinitely, they would eventually result in a doubling of the population per generation from births. In 1955 the whites exhibited a net reproduction rate of 1,613 per 1,000 females, signifying the potentiality of a 61 per cent increase in population per generation from births. Needless to say, few people would expect these potentialities ever to be realized. Few would expect the age-specific fertilities of 1955 to continue indefinitely for either the whites or nonwhites. However, the figures are cited because they emphasize again the profound changes in fertility rates that have

whites were the same, 14.9 per 1,000 population. This reflects a true rate of natural increase of 0 which in turn is analogous to the net reproduction rate of 1,000. For the nonwhites in 1940 the intrinsic birth and death rates were 22.7 and 15.4, respectively. These reflect a true rate of natural increase of 7.3 per 1,000 per year and accompanying a net reproduction rate of 21 per cent above replacement requirements per generation for the nonwhites.

The trends of the intrinsic birth rates by color are in the nature of the case rather similar to those of the general fertility

Table 3. Annual general fertility rates, reproduction rates, and intrinsic rates of birth and death, by color, United States, 1935-1955.

YEAR	ANNUAL NUMBER LIVE BIRTHS PER 1,000 WOMEN 15-44 <sup>1</sup>		REPRODUCTION RATES				INTRINSIC RATES <sup>2</sup>			
			Gross <sup>3</sup>		Net <sup>3</sup>		Birth		Death	
	White	Nonwhite	White	Nonwhite	White	Nonwhite	White	Nonwhite	White	Nonwhite
1935			1,059	1,350	958	1,108				
1936			1,039	1,317	945	1,090				
1937			1,049	1,361	959	1,137				
1938			1,078	1,381	990	1,161				
1939			1,052	1,373	970	1,162				
1940	77.1	102.4	1,082	1,422	1,002	1,209	14.9	22.7	14.9	15.4
1941	80.7	105.4	1,131	1,458	1,052	1,242	15.8	23.6	13.9	14.7
1942	89.5	107.6	1,250	1,487	1,171	1,293	18.0	24.2	12.1	13.4
1943	92.3	111.0	1,294	1,543	1,211	1,348	18.8	25.7	11.7	12.9
1944	86.3	108.5	1,214	1,520	1,139	1,334	17.3	25.2	12.5	12.5
1945	83.4	106.0	1,175	1,493	1,106	1,323	16.5	24.7	12.7	12.2
1946	100.4	113.9	1,406	1,600	1,331	1,435	20.4	24.8	10.1	11.5
1947	111.8	125.9	1,568	1,766	1,492	1,594	23.1	27.4	8.7	10.0
1948	104.3	131.6	1,468	1,846	1,401	1,680	21.7	28.7	9.2	9.3
1949	103.6	135.1	1,461	1,906	1,396	1,741	21.2	29.6	9.1	8.9
1950	102.3	137.3	1,446	1,940	1,387	1,780	21.0	29.8	9.0	8.5
1951	107.4	141.9	1,532	2,025	1,471	1,864	22.5	31.1	8.4	8.0
1952	109.8	143.1	1,577	2,059	1,514	1,894	23.1	31.3	8.0	7.9
1953	110.6	147.0	1,603	2,114	1,543	1,955	23.7	31.8	7.8	7.4
1954	113.1	152.9	1,657	2,212	1,598	2,058	24.3	33.1	7.4	6.8
1955	113.2	155.1	1,671	2,251	1,613	2,097	24.7	33.6	7.2	6.6

<sup>1</sup> United States Department of Health, Education, and Welfare: Births by Age of Mother, Race, and Live-Birth Order. *Vital Statistics—Special Reports*, 46, No. 18, October 11, 1957, p. 465 (rates adjusted for underregistration).

<sup>2</sup> *Ibid.*, p. 469 (rates adjusted for underregistration).

<sup>3</sup> *Population Index*, 23, No. 2, April, 1957, pp. 171-172; 24, No. 2, April, 1958.



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rates and the gross reproduction rates. The intrinsic birth and death rates for whites in 1955 were 24.7 and 7.2, reflecting a true rate of natural increase of 17.5. The intrinsic birth and

death rates for nonwhites were 33.6 and 6.6, reflecting a true rate of natural increase of 27.0. It will be noticed that the net reproduction rate for the nonwhites in 1955 was 2,097 per 1,000 females or somewhat above the requirements for potential doubling of the population per generation.

Three points may be noted regarding the trends in the intrinsic death rate. In the first place, for both whites and nonwhites the intrinsic death rate for 1955 was only half as

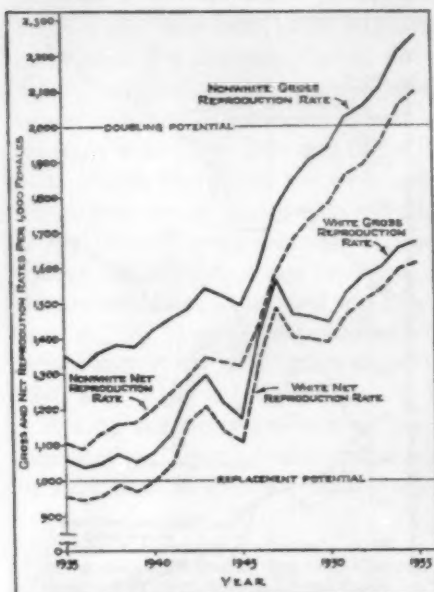


Fig. 3. Gross and net reproduction rates per 1,000 females by color. United States, 1935-1955. (See Table 3.)

high, or less than half as high, as that for 1940. In the second place, the decline in the intrinsic death rate since 1940 has been steadier for the nonwhites than for the whites. This is because the nonwhites had the dual advantages of (a) more constant reductions in mortality risks and (b) younger age structures in the stable populations. In the third place, since 1949, the intrinsic death rate for nonwhites has been slightly lower than that for whites. This can be accounted for by the difference in age distributions of the stable populations mentioned above. Finally, it may be noted that prior to 1947 the intrinsic death rates generally exceeded the crude death rates for whites and

nonwhites. Since 1947 the situation has been reversed and intrinsic death rates were lower than the crude death rates. This reversal is what one would expect in a change from a declining to a rising birth rate. In 1955, the intrinsic birth rates were about the same as the crude birth rates for both whites and nonwhites.<sup>3</sup>

The data presented thus far on trends have been based upon the annual registrations of births and deaths. The rates have related to total populations and to total women of childbearing age. Hence, the trends in the crude birth rates, general fertility rates, reproduction rates, and intrinsic rates have reflected changes in marriages as well as trends in marital fertility. We may turn now to fertility data available from the Censuses of 1910, 1940, and 1950 for further information regarding trends in fertility, the relevance of trends in nuptiality, and fertility differentials among the nonwhites as compared with the whites.

<sup>3</sup> Possibly 1955 marked the first time in our vital statistics history that the intrinsic birth rate was a little higher than the crude birth rate for whites.

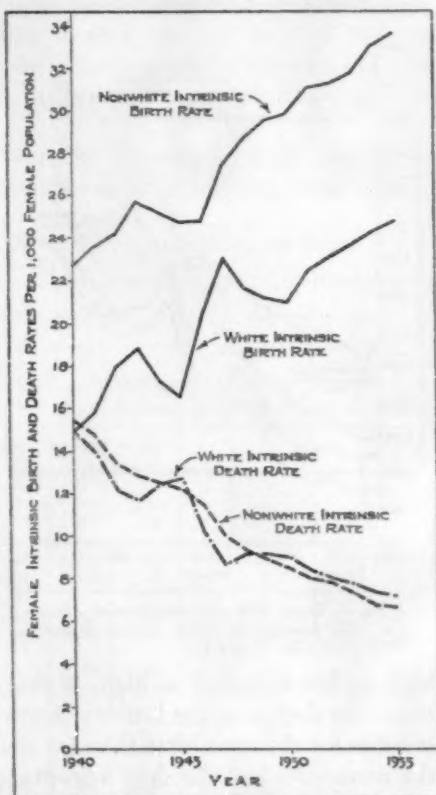


Fig. 4. Female intrinsic birth and death rates per 1,000 female population. United States, 1940-1954. (See Table 3.)

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## TRENDS IN PROPORTIONS MARRIED

There were substantial increases during 1940-1950 in the proportions ever-married among nonwhite women under 35 years of age. However, these increases were smaller than those for whites. For instance, among nonwhite women 20-24 years old the proportion ever-married was 63 per cent in 1940 and 69 per cent in 1950. Among the whites the corresponding percentages were 52 in 1940 and 68 in 1950. (See Table 4.)

As among the whites the increases in proportions ever-married nonwhites at young ages were larger in the "upper" than in the "lower" socioeconomic classes. Thus among nonwhite women 20-24 years of age reporting 4 or more years of college, the proportion ever-married was 26 per cent in 1940 and 37 per cent in 1950. Among those women of similar age of elementary school status, the proportion ever-married was 69 per cent in 1940 and 74 per cent in 1950.<sup>4</sup>

Among the women who were ever-married the proportions described as "married once and husband present" were higher in 1950 than in 1940 for both whites and nonwhites of given

Table 4. Percentage of all women that were ever married and percentages of the ever-married women that were classified as "married once and husband present," by color and age, United States 1940 and 1950.<sup>1</sup>

Age	PER CENT OF ALL WOMEN THAT WERE EVER MARRIED				PER CENT OF EVER-MARRIED WOMEN CLASSIFIED AS MARRIED ONCE AND HUSBAND PRESENT			
	White		Nonwhite		White		Nonwhite	
	1940	1950	1940	1950	1940	1950	1940	1950
15-19	11.1	16.7	18.8	21.3	77.6	86.2	66.4	73.4
20-24	51.7	68.2	63.1	68.7	80.0	86.3	64.8	68.3
25-29	77.0	87.0	81.1	85.6	79.0	83.6	58.9	62.6
30-34	85.2	90.8	87.8	91.5	76.3	81.6	52.6	57.8
35-39	88.5	91.5	91.7	93.3	72.9	78.5	47.2	52.9
40-44	90.1	91.5	93.8	94.3	69.9	75.2	43.1	47.2
45-49	91.1	91.6	94.9	95.0	66.7	72.3	40.2	42.0

<sup>1</sup> Source: Computed from data in U. S. Bureau of the Census: FERTILITY, Special Report, P-E No. 5C, Washington, U. S. Government Printing Office, 1955, Tables 4 to 7 inclusive.

<sup>4</sup> See Grabill, Wilson H.; Kiser, C. V.; and Whelpton, P. K.: THE FERTILITY OF AMERICAN WOMEN. New York, John Wiley & Sons, 1958, pp. 184-188.

ages. The 1940-1950 increases were of fairly similar magnitude by color so the differentials by color remained essentially the same.

The proportion of unbroken first marriages tended to be substantially lower among nonwhite than among ever-married women. Furthermore the decrease in the proportion of unbroken first marriages with advancing age tended to be sharper among the nonwhites than among the whites. For example, among ever-married white women the proportion classified as "married once and husband present" ranged from 86 per cent at ages 15-19 to 72 per cent at ages 45-49. Among the nonwhites the corresponding proportions extended from 73 per cent at ages 15-19 to 42 per cent at ages 45-49. The sharper declines with advancing age in the proportion of unbroken first marriages among the nonwhites is due partly to the impact of mortality of husbands and partly to the greater impact of separation.

#### FERTILITY RATES AND PER CENT CHANGES, 1940-1950

Table 5 presents cumulative fertility rates (children ever born per 1,000 ever-married women) by age, color, and residence for 1910, 1940, and 1950 and per cent change in these rates during 1940-1950.<sup>5</sup>

Among both whites and nonwhites there were increases at young ages and decreases at older ages during 1940-1950 in average number of children ever born. The generally lower fertility rates for 1950 than for 1940 among ever-married women 35 years of age and over simply means that for these women the baby boom came too late to offset the long-time decline in size of family among women of those ages. There were increases in *current fertility* rates at all ages of the childbearing

<sup>5</sup> Questions regarding number of children ever born (excluding stillbirths) were asked of all ever-married women in the 1910 census, of a 5 per cent sample of the ever-married women in the 1940 Census and of a three and one-third per cent sample in the 1950 Census. In Table 5 the 1950 data by residence follow the old (1940) definition of urban. Also, the 1940 data in Table 5 were revised by the Bureau of the Census to include estimates of the number of children ever born to ever-married women who made no report.

Table 5. Children ever born per 1,000 ever-married women in 1910, 1940 and 1950, and per cent change in rates, 1940-1950 by color, urban-rural residence, and age of the woman.

AGE OF WOMAN	WHITE				NONWHITE			
	Children Ever Born per 1,000 Women			Per Cent Change 1940-1950	Children Ever Born Per 1,000 Women			Per Cent Change 1940-1950
	1910 <sup>a</sup>	1940 <sup>b</sup>	1950 <sup>b</sup>		1910 <sup>a</sup>	1940 <sup>b</sup>	1950 <sup>b</sup>	
UNITED STATES								
15-19	699	541	548	1.3	836	716	917	28.1
20-24	1,344	946	1,028	8.7	1,754	1,248	1,473	18.0
25-29	2,099	1,418	1,620	14.2	2,739	1,800	1,932	7.3
30-34	2,880	1,928	2,034	5.5	3,592	2,270	2,272	0.1
35-39	3,683	2,379	2,218	- 6.8	4,577	2,681	2,476	- 7.6
40-44	4,263	2,720	2,329	-14.4	5,527	3,056	2,660	-13.0
45-49	4,594	2,969	2,456	-17.3	6,183	3,288	2,803	-14.8
URBAN								
15-19	591	477	493	3.4	681	673	898	33.4
20-24	1,129	774	893	15.4	1,216	982	1,312	33.6
25-29	1,757	1,155	1,434	24.2	1,766	1,329	1,605	20.8
30-34	2,414	1,600	1,804	12.8	2,315	1,674	1,771	5.8
35-39	3,137	1,986	1,935	- 2.6	3,018	1,970	1,848	- 6.2
40-44	3,721	2,312	2,011	-13.0	3,802	2,335	2,038	-12.7
45-49	4,070	2,566	2,136	-16.8	4,503	2,397	2,241	- 6.5
RURAL NONFARM								
15-19	748	593	608	2.5	874	763	947	24.1
20-24	1,471	1,088	1,192	9.6	1,959	1,288	1,664	29.2
25-29	2,279	1,650	1,804	9.3	3,109	2,009	2,424	20.7
30-34	3,044	2,182	2,242	2.7	3,913	2,544	2,888	13.5
35-39	3,804	2,620	2,422	- 7.6	4,783	3,047	3,151	3.4
40-44	4,246	2,949	2,541	-13.8	5,570	3,349	3,235	- 3.4
45-49	4,514	3,192	2,657	-16.8	6,208	3,671	3,113	-15.2
RURAL FARM								
15-19	768	582	590	1.4	892	736	927	26.0
20-24	1,594	1,254	1,303	3.9	1,994	1,591	1,901	19.5
25-29	2,618	2,025	2,166	7.0	3,346	2,600	2,943	13.2
30-34	3,660	2,796	2,731	- 2.3	4,566	3,476	3,959	13.9
35-39	4,635	3,463	3,134	- 9.5	5,829	4,156	4,502	8.3
40-44	5,290	3,879	3,401	-12.3	6,966	4,522	4,714	4.2
45-49	5,610	4,054	3,579	-11.7	7,534	4,900	4,861	- 0.8

<sup>a</sup> United States Bureau of the Census: POPULATION: DIFFERENTIAL FERTILITY, 1940 and 1910, *Fertility by States and Large Cities*, Washington, Government Printing Office, 1943, Table 4 (pp. 15-17). 1910 urban-rural figures adjusted to 1940 classification. The 1910 data relate to ever-married white and nonwhite women reporting on children ever born.

<sup>b</sup> United States Bureau of the Census: FERTILITY—Special Report, P-E No. 5C, Washington, Government Printing Office, 1955, Tables 4 and 6, pp. 23-26. Urban-rural residence in 1950 by old definition partly estimated. Data for 1940 revised by Census Bureau to include estimates of children ever born for women who made no report. In this table the 1940 data relate to whites and nonwhites rather than to native whites and Negroes.

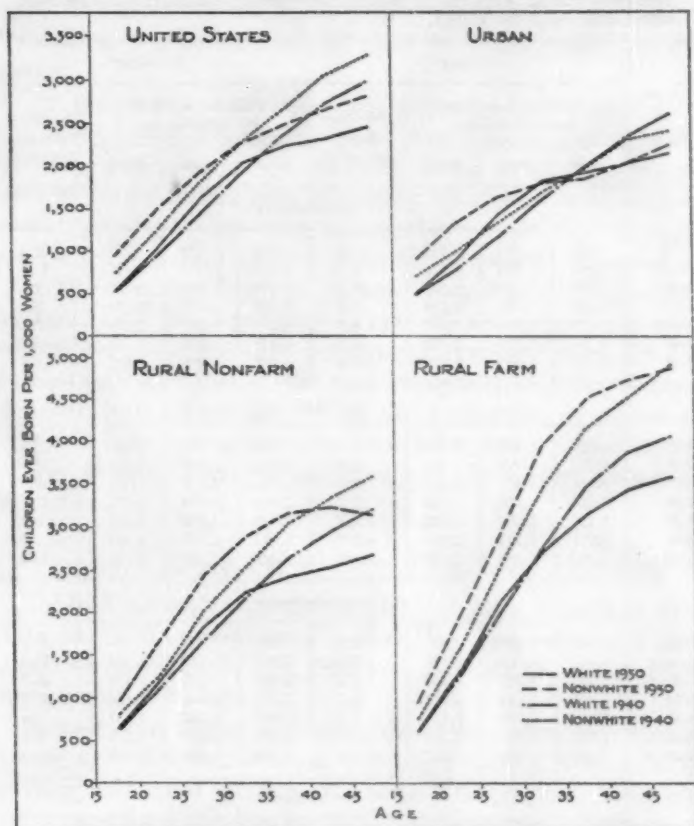


Fig. 5. Children ever born per 1,000 ever-married women, by color, age and urban-rural residence. United States, 1940 and 1950. (See Table 5.)

span, as indicated by annual registration data and by fertility ratios relating to children under 5 years of age.

Among ever-married white women, the 1940-1950 maximum increases in age-specific fertility tended to come at ages 25-29, among nonwhites the maximum tended to come at younger ages, 15-19 or 20-24. Thus among urban ever-married women 15-19 years of age the 1940-1950 increase in fertility was 3 per



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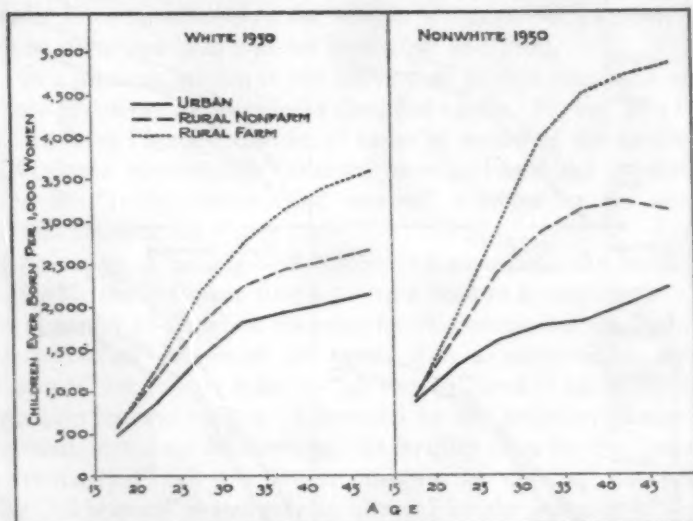


Fig. 6. Urban-rural differentials in fertility among white and nonwhite ever-married women, by age. United States, 1950. (See Table 5.)

cent for the whites and 33 per cent for the nonwhites. At ages 20-24, the increase was 15 per cent for whites and 34 per cent for nonwhites. At ages 25-29, the increase was 24 per cent for whites and 21 per cent for nonwhites. Among whites and nonwhites the percentage increases in fertility at the young ages tended to be higher in urban than in rural areas.

As noted in Figure 5, in the United States as a whole and also within the rural areas the average number of children ever born to ever-married women of given ages was consistently higher for the nonwhites than for the whites in both 1940 and 1950. Within the urban areas the fertility rates for nonwhites fell below those for whites at ages 30-34 and 35-39 in 1950. The rates were also lower for urban nonwhites than for urban whites at ages 35-39 and 45-49 in 1940.

The differentials in fertility by color tended to be smallest in urban areas and largest in rural-farm areas (Figure 5.) Also, the differentials in fertility by residence tended to be

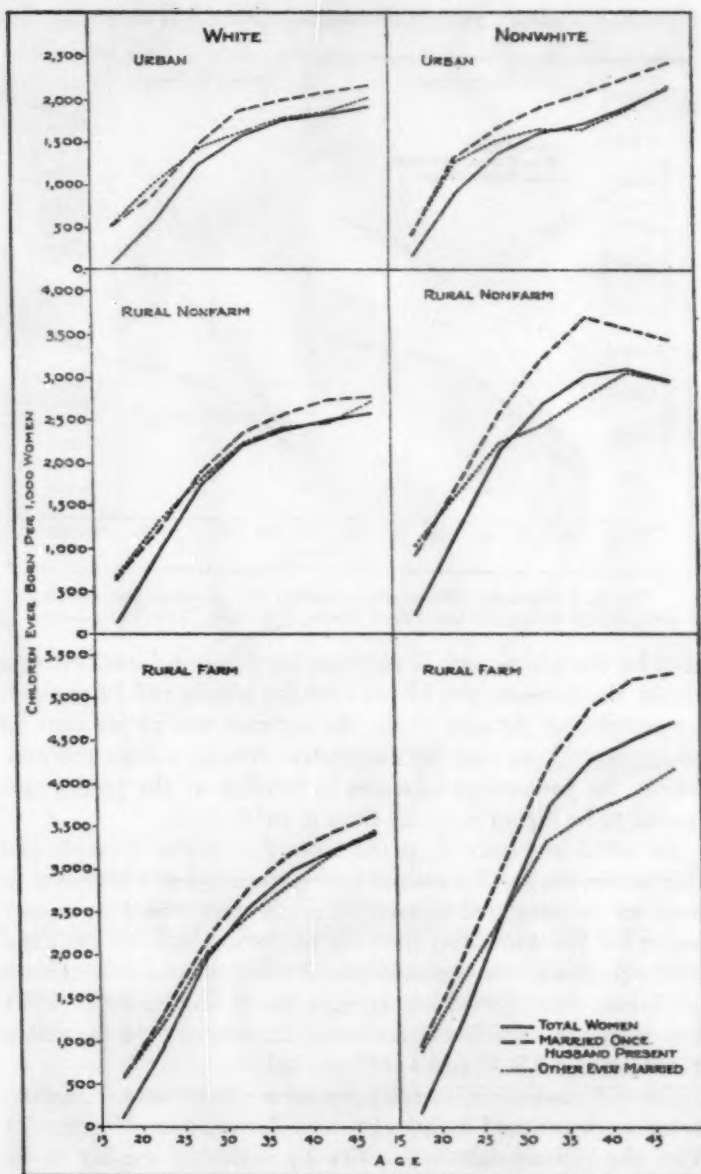


Fig. 7. Children ever born per 1,000 women of specified marital status, by color, age, and urban-rural residence. United States, 1950.  
Source: U. S. Bureau of the Census: Fertility, Special Report, P-E, No. 5C, Washington, U. S. Government Printing Office, 1955. Table 1.

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wider for nonwhites than for whites. (Figure 6.) In general, these situations held true for both 1940 and 1950.

In a previous section it was noted that broken marriages are more prevalent for nonwhites than for whites. It may also be noted from Figure 7 that in all types of residence the fertility differential between the "married once and husband present" and the "other ever-married women" is wider for the nonwhites than for the whites.

As expected, among both whites and nonwhites the fertility rates for the unbroken first marriages tend to be highest at all ages except 15-24 when the rates for this group and the "other ever-married" are much the same. Also as expected, at ages below 30 the fertility rates for "all women" tend to fall in lowest position because they are influenced by the inclusion of single women. After age 30, however, the fertility rates for the "other ever-married" fall into lowest position; by that age the rate for "all women" is not greatly affected by the presence of unmarried women.

#### TRENDS AND DIFFERENTIALS IN FERTILITY RATIOS

Figure 8 presents fertility ratios by residence, age, and color for 1940 and 1950. The fertility ratios relate to "number of own children under five years old per 1,000 ever-married women." They are derived from the rosters of children residing in the households enumerated in the Census. Largely on the basis of the data regarding "relationship to the head of the household" children other than "own" children were eliminated from the data. The processing and tabulation of the data for fertility ratios of this type were restricted to the women who were also in the fertility samples.

Fertility ratios have the advantage of reflecting current fertility more sensitively than do the cumulative fertility rates. However, they have the disadvantage of being affected by the timing of births. In the nature of the case they may not be very indicative of trends in size of completed family. In 1950, the fertility ratios for nonwhites in the United States as a whole

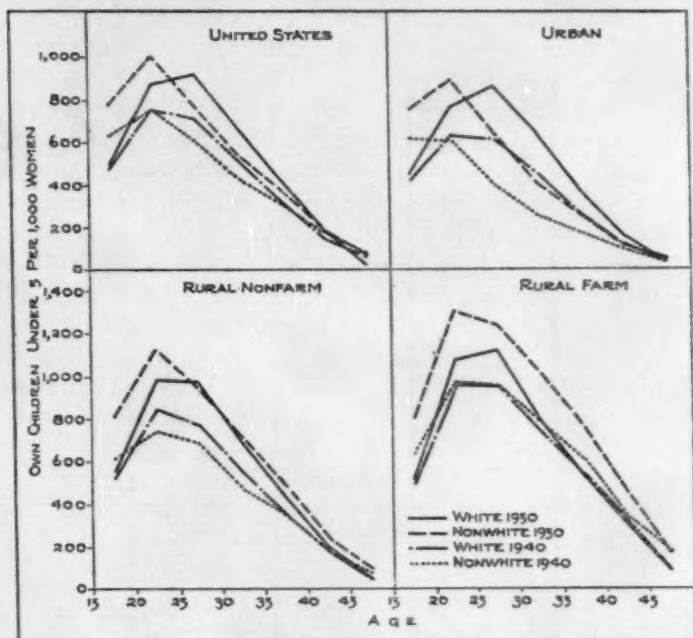


Fig. 8. Number of own children under five years old per 1,000 ever-married women, by color, age, and urban-rural residence. United States, 1940 and 1950.

Source: U. S. Bureau of the Census: *FERTILITY*, Special Report, P-E, No. 5C, Washington, U. S. Government Printing Office, 1955. Tables 36 and 37.

tended to surpass those for whites at ages under 25 and to fall below those for whites at older ages. This pattern was especially pronounced in the urban areas. Within rural nonfarm areas the fertility ratios for the nonwhites exceeded those for whites at ages under 25 and thereafter there was little difference by color. Within the rural farm areas the fertility ratios for the nonwhites surpassed those for whites at all ages.

The 1940-1950 increases in fertility ratios, like those in cumulative fertility rates, were much larger for nonwhite than for white women under 25 years of age. As noted in Figure 9, the urban-rural differentials in fertility ratios among women

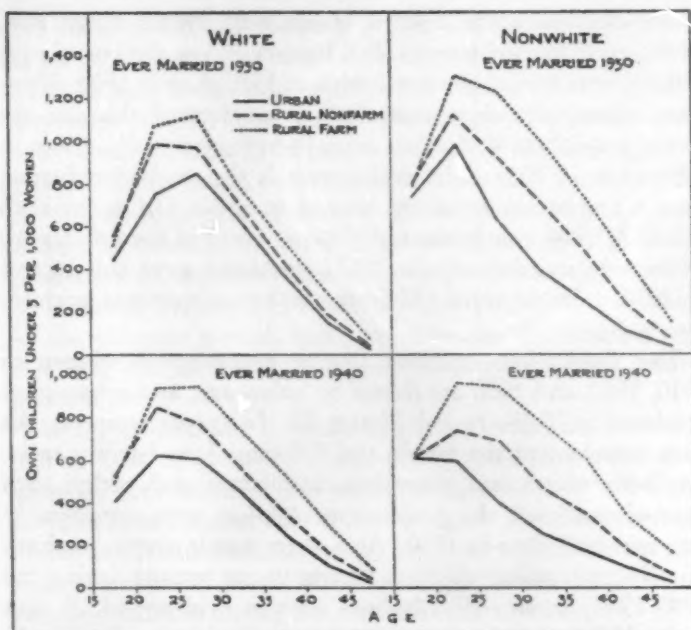


Fig. 9. Urban-rural differentials in fertility ratios among white and non-white ever-married women. United States, 1940 and 1950.  
Source: U. S. Bureau of the Census: *FERTILITY*, Special Report, P-E, No. 5C, Washington, U. S. Government Printing Office, 1955. Tables 36 and 37.

under 25 underwent little change and were essentially the same for whites and nonwhites. However, among women 25 years of age and over there was a greater contraction of the urban-rural differentials in fertility ratios among the whites than among the nonwhites during 1940-1950. The urban-rural differentials in fertility ratios were somewhat wider for nonwhites than for whites in 1940; they were *much* sharper for nonwhites than for whites in 1950.

#### TREND IN CHILDLESSNESS OF THE NONWHITES

Much of the sharp increase in the fertility of nonwhite women at young ages has stemmed from remarkable declines

in childlessness since 1940. For instance, among urban non-white ever-married women 20-24 years of age the cumulative fertility rate was 34 per cent higher in 1950 than in 1940. However, among nonwhite ever-married *mothers* of this age the average number of children ever born was actually lower in 1950 than in 1940. The explanation is the marked reduction in the proportion reporting that they never had a live-born child. In 1940, nearly one-half (46 per cent) of the urban non-white ever-married women 20-24 years old gave this report. In 1950, only one-third (32.5 per cent) were reported as childless.\*

The proportions childless among ever-married women in 1910, 1940, and 1950 are shown by color, age, and urban-rural residence in Table 6 and Figure 10. In certain respects the data complement the trends and differentials in fertility rates. For both whites and nonwhites, at all ages and within each type of residence, the proportions childless were considerably larger in 1940 than in 1910. Also, there was in general a sharp drop in proportions childless among young women during the 1940-1950 decade. The declines were in evidence at all ages under 35 but they were most pronounced at ages under 25. At

\* A statement regarding the data on childlessness is in order. The 1910 percentages may be a little too low for two reasons. They are based upon women reporting, and subsequent tests have indicated that childless women are overly represented among those not reporting and hence underrepresented among those reporting. Secondly, since the 1910 Census contained parallel questions regarding number of children ever born and number of children living there may have been some greater tendency erroneously to include stillbirths in the number of children ever born than was the case in subsequent censuses. However, neither the non-reports nor the erroneous inclusion of stillbirths in 1910 are believed to be major deficiencies.

The non-reports on children ever born and the selection of childless couples into the non-report category probably were more frequent in the 1940 census than any other. Most of the published fertility data from the 1940 Census, including those on fertility in relation to occupational and educational status, are based upon women reporting. As the notes indicate, however, the data presented in Tables 5 and 6 were revised to include estimates of children ever born to women not reporting.

Because of certain improvements in schedule design, the proportion of women in the fertility sample failing to report on children ever born was considerably smaller in 1950 than in 1940. However, all of the 1950 data were processed before publication to include estimates of the number of children for women not reporting. For a more adequate description, see Grabill, W. H.; Kiser, C. V.; and Whelpton, P. K.: *THE FERTILITY OF AMERICAN WOMEN*. New York, John Wiley & Sons, 1958, Appendix A and Appendix B.



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ages 40-44 and 45-49 the proportions childless were generally higher in 1950 than in 1940. The increase in childlessness at the older ages is the counterpart of the lower cumulative fertility rates in 1950 than in 1940 for women of virtually completed fertility. It will be noted that in 1950 the proportion childless for the urban nonwhites 20-24 years of age was virtually the same as that of women 45-49 years of age. Among urban white women the percentage childless at ages 30-34 was lower than at any older age. This again reflects the previous era of lower fertility and relatively high proportions childless. As the younger women move through the childbearing ages they will replace the older cohorts of relatively high proportions childless.

As for differentials in childlessness by color, we may note that in 1950 as in 1940 the proportion childless tended to be lower for nonwhites than for whites at ages under 25 and higher for nonwhites than for whites at older ages. The relatively high proportion of childlessness among nonwhites of middle age may represent the last stages of an era of phenomenally high proportions childless among the nonwhite married couples.

The census data for 1910 indicated somewhat higher proportions childless among nonwhites than among the whites in urban areas. However, there were relatively few nonwhites in urban areas in 1910. There was no question on number of children ever born in the 1920 and 1930 Censuses. However, Notestein's analysis of 1930 Census data for the East North Central States pertaining to children under 10 years of age per marriage of 5 to 9 years duration, indicated that the problem of childlessness among Negroes, especially in larger cities, was well entrenched in the 1920 decade.<sup>7</sup>

Comparisons of 1940 data on children ever born are not available by size of city, but in the urban areas as a whole the

<sup>7</sup> For the total area, the proportion of the marriages with no children under 10 years old in residence was about 45 per cent for Negroes, about twice the proportion (23 per cent) for native whites. In cities of 250,000 and over, the percentage without children was about 53 for Negroes and 28 for native whites. See Notestein, F. W.: *Differential Fertility in the East North Central States*. The Milbank Memorial Fund *Quarterly*, xvi, No. 2, April, 1938, p. 180.

Table 6. Percentages childless among ever-married women by color, urban-rural residence, and age. United States, 1910, 1940, and 1950.

AGE OF WOMAN	WHITE			NONWHITE		
	1910 <sup>a</sup>	1940 <sup>a</sup>	1950 <sup>b</sup>	1910 <sup>a</sup>	1940 <sup>a</sup>	1950 <sup>b</sup>
UNITED STATES						
15-19	43.5	56.2	55.4	39.5	47.0	38.1
20-24	24.2	40.1	34.0	24.1	38.3	28.6
25-29	16.8	29.5	20.1	19.5	34.1	29.6
30-34	13.4	22.4	15.8	16.4	30.8	30.2
35-39	11.5	18.7	17.5	13.2	28.6	31.9
40-44	10.4	16.6	18.9	10.4	25.4	29.6
45-49	9.6	16.1	19.5	8.7	23.4	28.1
URBAN						
15-19	50.6	60.9	58.9	47.6	48.5	38.2
20-24	30.7	47.4	39.1	36.8	46.4	32.5
25-29	22.1	35.3	23.1	31.4	42.5	34.3
30-34	17.9	26.6	17.9	27.4	38.3	35.1
35-39	14.9	22.0	19.6	22.2	35.2	37.5
40-44	12.8	19.1	20.8	17.3	31.3	33.7
45-49	11.5	18.4	21.3	13.4	29.7	31.9
RURAL NONFARM						
15-19	40.4	52.3	51.3	37.2	45.6	37.8
20-24	20.1	33.6	27.3	21.3	37.6	22.9
25-29	13.4	24.1	16.6	15.6	29.9	21.3
30-34	10.8	18.7	13.5	12.8	26.5	23.2
35-39	9.8	16.1	15.8	10.7	24.7	24.0
40-44	10.1	14.9	17.9	8.3	21.5	26.0
45-49	9.3	14.7	18.7	8.0	18.4	24.6
RURAL FARM						
15-19	38.7	53.1	53.2	37.0	46.2	38.0
20-24	16.8	27.7	24.7	16.6	27.6	20.0
25-29	9.3	16.6	12.7	11.6	20.1	16.8
30-34	6.8	11.8	10.0	8.5	16.1	14.4
35-39	6.2	10.3	10.9	6.7	15.4	15.5
40-44	6.0	9.6	12.4	5.8	14.1	15.6
45-49	6.1	9.9	12.9	5.2	13.2	15.3

<sup>a</sup> United States Bureau of the Census: *POPULATION: DIFFERENTIAL FERTILITY, 1940 and 1910, Fertility by States and Large Cities*, Washington, Government Printing Office, 1943, Table 4 (pp. 15-17). 1910 urban-rural figures adjusted to 1940 classification. The 1910 data relate to ever-married white and nonwhite women reporting on children ever born.

<sup>b</sup> United States Bureau of the Census: *FERTILITY—Special Report*, P-E No. 5C, Washington, Government Printing Office, 1955, Tables 4 and 6, pp. 23-26. Urban-rural residence in 1950 by old definition partly estimated. Data for 1940 revised by Census Bureau to include estimates of children ever born for women who made no report. In this table the 1940 data relate to whites and nonwhites rather than to native whites and Negroes.

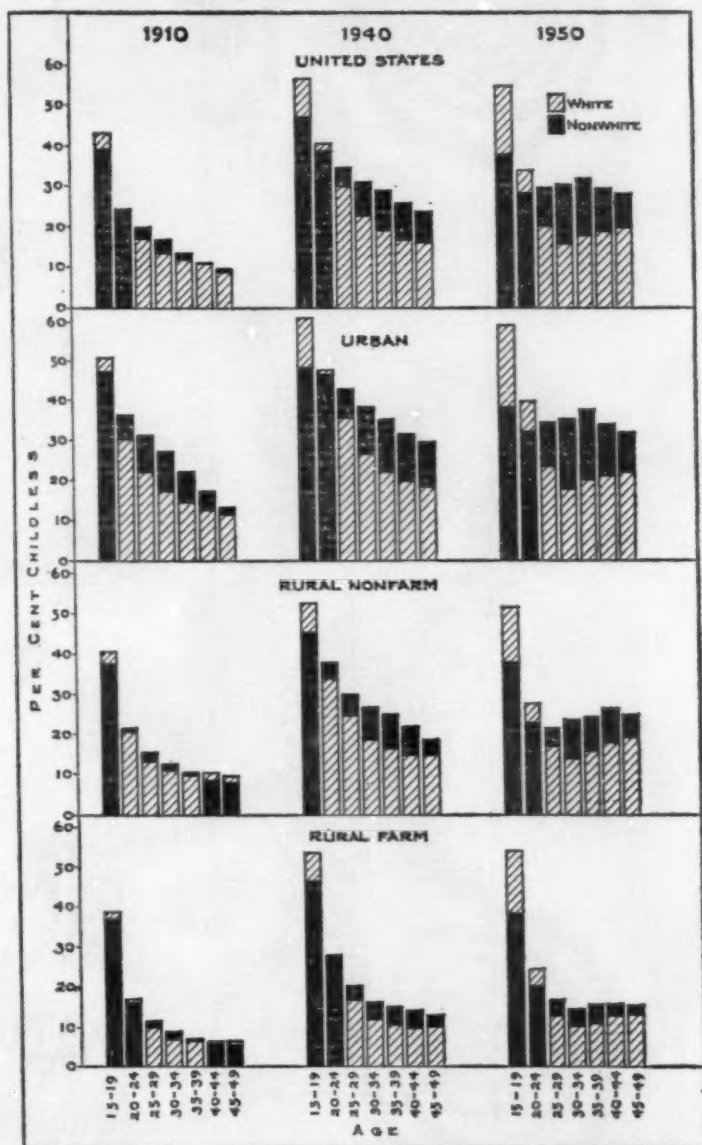


Fig. 10. Percentages childless among ever-married women, by color, age and urban-rural residence. United States, 1910, 1940, and 1950. (See Table 6.)

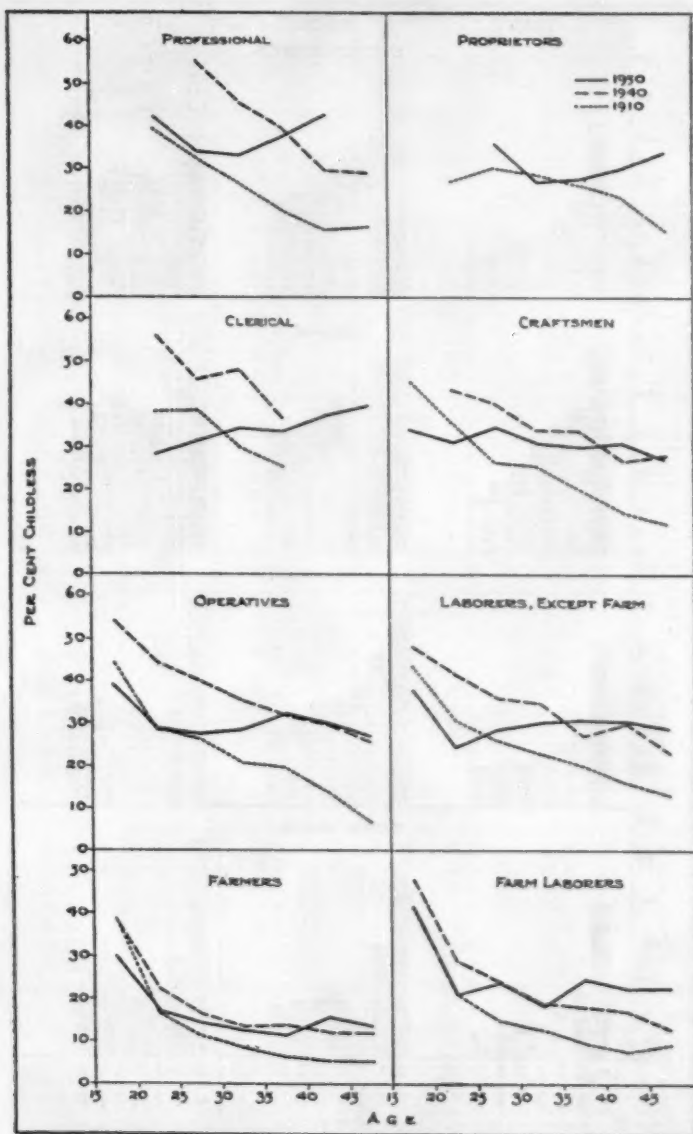


Fig. 11. Percentages childless among Negro women in 1910 and 1940, and nonwhite women in 1950, married once and husband present, by age of women and major occupation group of the husband. United States, 1910, 1940, and 1950. (See Table 7.)

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proportion childless among the nonwhites tended to be considerably higher than that of whites after age 25. The differential still existed in 1950. However, the sharp declines in proportions childless among young nonwhites appears to portend a narrowing of the differential. In 1950 the proportion

Table 7. Percentages childless among Negro women in 1910 and 1940 and nonwhite women in 1950. Women married once and husband present by age of woman and occupation group of the husband. United States, 1910, 1940, and 1950.<sup>1</sup>

OCCUPATION GROUP AND YEAR	15-19	20-24	25-29	30-34	35-39	40-44	45-49
<i>Professional</i>							
1910	—	39.1	32.9	26.7	20.3	16.1	16.8
1940	—	—	55.9	45.6	39.6	29.7	29.6
1950	—	42.5	34.3	33.0	37.5	42.9	—
<i>Proprietors</i>							
1910	—	27.7	30.7	28.9	26.7	23.3	15.6
1940	—	—	—	—	—	—	—
1950	—	—	36.6	27.8	28.4	30.5	34.4
<i>Clerical</i>							
1910	—	38.4	38.7	29.8	25.1	—	—
1940	—	56.2	45.9	48.4	36.4	—	—
1950	—	28.4	31.8	34.1	33.8	37.7	39.4
<i>Craftsmen</i>							
1910	45.5	35.4	26.0	25.0	19.4	14.3	11.5
1940	—	43.1	40.2	33.5	33.3	26.3	27.8
1950	33.5	30.9	34.8	30.7	29.2	30.6	27.3
<i>Operatives</i>							
1910	44.4	28.6	26.4	20.9	19.6	13.9	6.9
1940	53.7	44.4	40.0	35.3	31.9	29.8	25.7
1950	39.0	28.8	27.5	28.8	32.5	30.3	26.7
<i>Service Workers</i>							
1910	55.6	42.6	39.7	37.3	31.6	27.7	22.8
1940	53.0	51.9	47.4	45.5	41.8	35.0	34.6
1950	42.5	30.9	35.7	38.6	39.9	34.8	33.0
<i>Laborers, Exc. Fm.</i>							
1910	43.6	30.7	25.7	22.3	19.4	15.1	12.9
1940	48.0	41.7	35.8	34.2	26.9	29.9	22.8
1950	37.5	24.2	28.1	30.4	30.3	30.5	28.7
<i>Farmers</i>							
1910	38.3	16.4	11.1	8.2	6.5	5.5	5.2
1940	38.6	22.8	16.2	13.1	13.4	12.0	11.7
1950	29.2	16.9	14.1	12.4	11.6	15.1	13.8
<i>Farm Laborers</i>							
1910	41.5	21.6	14.7	12.6	9.8	7.7	9.4
1940	48.1	28.9	24.0	19.0	18.4	17.1	12.4
1950	41.6	21.6	23.6	18.5	24.4	22.4	22.3

<sup>1</sup> Sources: U. S. Bureau of the Census: POPULATION: DIFFERENTIAL FERTILITY 1940 and 1910, FERTILITY BY DURATION OF MARRIAGE, Washington, U. S. Government Printing Office, 1947. Tables 12 and 14.

U. S. Bureau of the Census: FERTILITY, Special Report, P-E, No. 5C, Washington, U. S. Government Printing Office, 1955. Table 29.

childless among the nonwhites 20-24 years of age was actually lower than that of nonwhites 35-39 and 40-44 years of age.

The trends in childlessness among nonwhite women in the United States as a whole since 1910 are shown by occupation group of the husband in Figure 11 and Table 7. These data relate to women of specific age and classified as "married once and husband present." Among women under 25, the proportions childless were generally much higher in 1940 than in 1910 and much lower in 1950 than in 1940. The 1940-1950 declines in childlessness were particularly marked for the wives of professional and clerical workers. However, at all occupational levels represented the proportions childless at ages under 25 in 1950 were about as low as, or lower than, the proportions observed for 1910. The declines in childlessness were least marked among wives of farmers and farm laborers; in these classes childlessness had not been particularly high in 1940.

#### PROPORTIONS WITH LARGE FAMILIES

Despite their handicap of relatively high proportions child-

Table 8. Per cent distribution of women according to number of children ever born, by color and age of woman. Woman married once and husband present. United States, 1950.<sup>1</sup>

COLOR AND AGE	TOTAL	NONE	1	2	3	4	5 OR MORE
<i>White</i>							
15-19	100.0	55.3	36.4	7.1	0.9	0.2	0.1
20-24	100.0	34.3	38.9	19.9	5.2	1.2	0.4
25-29	100.0	19.4	31.1	29.5	12.3	4.5	3.0
30-34	100.0	14.4	23.0	31.4	16.7	7.7	6.7
35-39	100.0	15.9	20.1	28.4	16.6	8.6	10.4
40-44	100.0	17.5	19.9	25.4	15.3	9.0	12.9
45-49	100.0	18.2	19.1	23.6	14.8	9.0	15.4
<i>Nonwhite</i>							
15-19	100.0	38.4	37.7	18.8	4.3	0.6	0.1
20-24	100.0	27.1	29.1	22.9	12.1	5.4	3.5
25-29	100.0	28.6	20.5	16.7	11.8	9.3	13.0
30-34	100.0	28.7	17.8	13.9	10.8	7.8	21.1
35-39	100.0	29.9	15.6	12.0	9.1	7.7	25.7
40-44	100.0	28.7	15.8	12.4	9.7	6.7	26.8
45-49	100.0	27.3	13.8	12.6	10.5	7.6	28.1

<sup>1</sup> Source: U. S. Bureau of the Census: FERTILITY, Special Report, P-E No. 5C, Washington, U. S. Government Printing Office, 1955, p. 21.



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less at ages 25 and over the fertility of nonwhites even at these ages tended to surpass that of whites in 1950. The explanation is the relatively high proportion of couples with large families. For instance, as indicated in Table 8, among women 30-34 years old "married once and husband present," the nonwhites had twice the proportion of childless couples but over three times the proportion of couples with five or more live births that the whites had. Among the whites, 14 per cent were childless, nearly one-fourth (23 per cent) reported one child, nearly one-third (31 per cent) reported two children, about one-fourth (24 per cent) reported three or four, and 7 per cent reported 5 or more. Among the nonwhites of similar age, 29 per cent were childless, 18 per cent reported one child, 14 per cent reported two, 19 per cent reported three or four, and 21 per cent reported five or more.

#### DIFFERENTIALS IN FERTILITY

The nonwhites are more heavily concentrated in the lower socio-economic levels than are the whites. Furthermore, the socio-economic differentiation that does exist appears to be accompanied by less variations in fertility among the nonwhites. In Figure 12 numbers of children ever born per 1,000 women "married once and husband present" are shown by color, age, residence, and education of the woman in 1950. In Figure 13 comparable materials are presented by occupation group of the husband. Data for four age groups are given in Tables 9 and 10. Some of the fertility rates for the nonwhites of given age, education, and residence are somewhat erratic because of small numbers. This may account in part for the more complete and more clear-cut inverse relation of fertility to educational attainment among the whites than the nonwhites. This also holds in the classification by occupation group of the husband.

One exception to the sharper differentials among the whites than the nonwhites is afforded by urban wives of College 4+, College 1-3, and High School 4 status. The nonwhite women

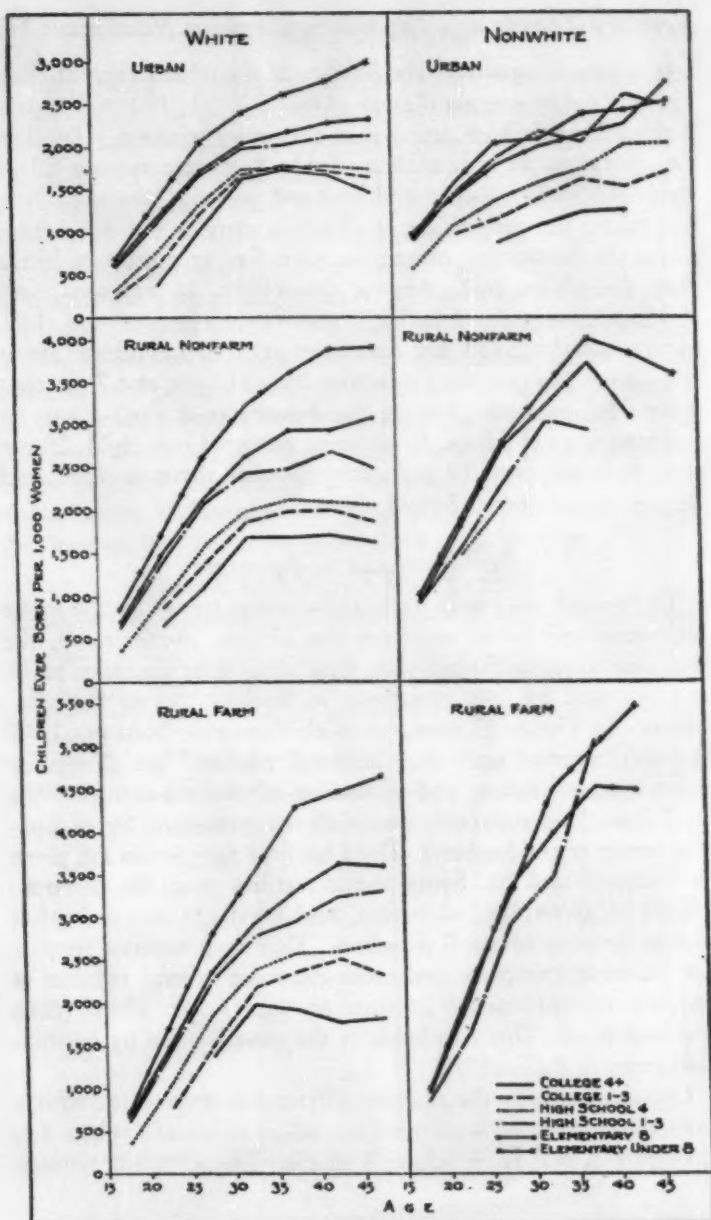


Fig. 12. Children ever born per 1,000 women "married once and husband present," by color, age, urban-rural residence and educational attainment of the woman. United States, 1950. (See Table 9.)

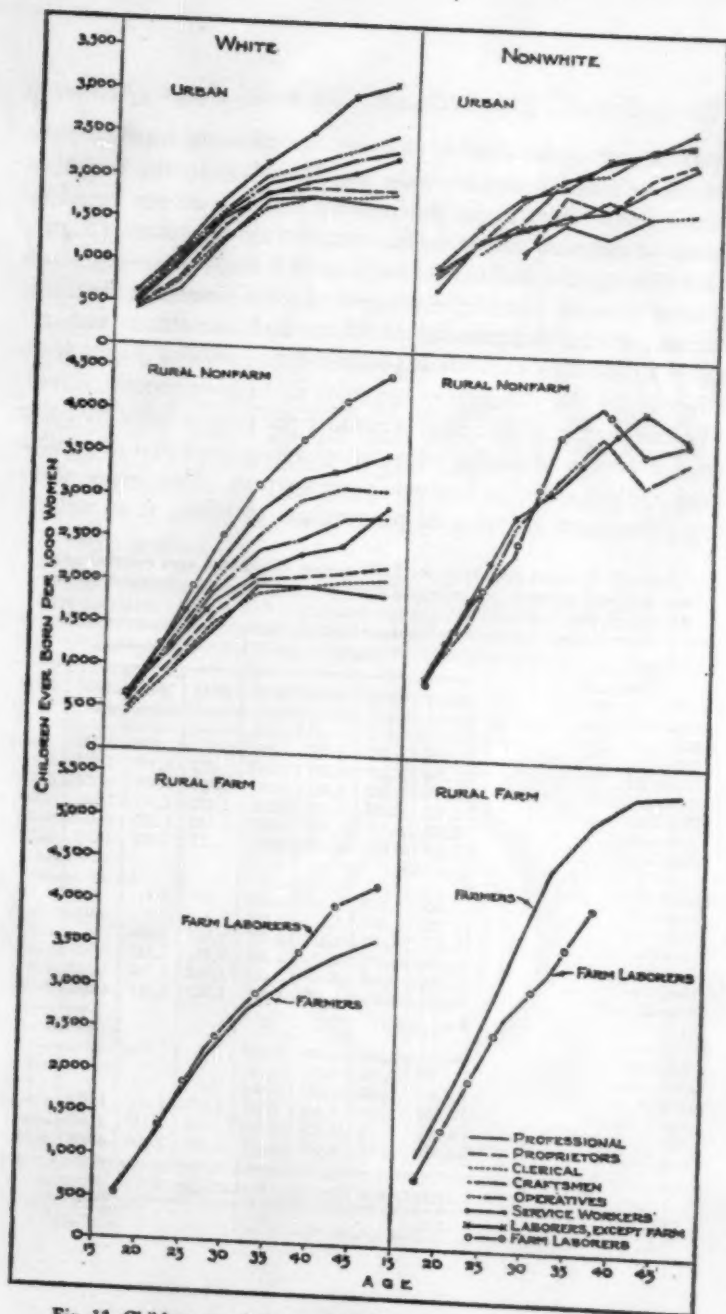


Fig. 13. Children ever born per 1,000 women "married once and husband present," by color, age, and urban-rural residence of the woman and by major occupation group of the husband. United States, 1950. (See Table 10.)

in these categories exhibit sharper variations in fertility than do the whites. Attention may also be called to the fact that within rural farm areas the relative position of the rates for wives of farmers and farm laborers differs by color. (Figure 13.) Among the whites, the fertility of farm laborers surpasses that of farmers. Among the nonwhites the reverse is the case.

Some of the comparisons of whites and nonwhites with respect to fertility that were presented in previous pages were affected by the differences by color in socio-economic status. The question may be asked regarding the comparisons by color among women of similar educational attainment and of similar rank with respect to husband's occupation. Also, since there are differences by color in proportions childless, it is well to

Table 9. Children ever born per 1,000 women of selected ages married once and husband present, by color, urban-rural residence and education of the woman, United States, 1950.<sup>1</sup>

RESIDENCE AND EDUCATION OF THE WOMEN	WHITE				NONWHITE			
	20-24	25-29	35-39	45-49	20-24	25-29	35-39	45-49
<i>Urban</i>								
College 4+	373	1,047	1,746	1,454	*	876	1,215	*
College 1-3	614	1,250	1,791	1,660	972	1,169	1,642	1,729
High School 4	777	1,342	1,781	1,749	1,080	1,379	1,735	2,045
High School 1-3	1,120	1,665	2,034	2,149	1,455	1,871	2,051	2,496
Elementary 8	1,175	1,731	2,173	2,339	1,450	1,800	2,147	2,769
Elem. Under 8	1,363	2,068	2,630	3,013	1,573	2,051	2,397	2,507
<i>Rural Nonfarm</i>								
College 4+	642	1,119	1,680	1,630	*	*	*	*
College 1-3	863	1,374	1,987	1,863	*	*	*	*
High School 4	975	1,586	2,112	2,053	1,471	2,094	*	*
High School 1-3	1,358	2,077	2,471	2,486	1,551	2,342	2,949	*
Elementary 8	1,460	2,143	2,938	3,063	1,818	2,786	3,747	*
Elem. Under 8	1,702	2,630	3,600	3,875	1,912	2,817	4,003	3,571
<i>Rural Farm</i>								
College 4+	*	1,393	1,939	1,808	*	*	*	*
College 1-3	797	1,536	2,357	2,336	*	*	*	*
High School 4	1,070	1,860	2,553	2,661	*	*	*	*
High School 1-3	1,438	2,260	2,954	3,303	1,652	2,902	5,079	*
Elementary 8	1,501	2,379	3,320	3,598	2,059	3,338	4,547	*
Elem. Under 8	1,788	2,806	4,275	4,624	2,188	3,294	4,993	5,461

<sup>1</sup> Source: United States Bureau of the Census: FERTILITY—Special Report, P-E No. 5C, Washington, United States Government Printing Office, 1955, Tables 21 and 23. (See Figure 12 for charting of age-specific rates in 15-49 span).

\* Rate is not shown because base is under 4,000.

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present the comparisons with respect to fertility rates among mothers (those bearing at least one child) as well as to all married women considered.

In Figure 14 each of six panels is devoted to a given educational group of urban ever-married women. Within each panel, fertility rates are shown by age for white and nonwhite ever-married women and for white and nonwhite ever-married mothers. The following points stand out:

1. At all educational levels the fertility rates for nonwhite ever-married women surpass those for white women at ages under 25 or 30 and fall below at older ages.
2. At virtually all ages and at all educational levels except College 4+, the fertility rates of nonwhite mothers exceed those of white mothers.

Table 10. Children ever born per 1,000 women of selected ages in unbroken first marriages by color and urban-rural residence of the wife and major occupation group of the husband, United States, 1950.<sup>1</sup>

RESIDENCE AND HUSBAND'S OCCUPATION	WHITE				NONWHITE			
	20-24	25-29	35-39	45-49	20-24	25-29	35-39	45-49
<i>Urban</i>								
Professional	670	1,234	1,794	1,678	*	1,242	1,426	*
Proprietors	832	1,410	1,898	1,897	*	1,184	1,730	2,309
Clerical	766	1,262	1,760	1,866	1,197	1,536	1,857	1,719
Craftsmen	972	1,543	2,064	2,320	1,310	1,583	2,292	2,561
Operatives	1,019	1,589	2,161	2,514	1,310	1,816	2,196	2,550
Service Wkrs.	959	1,518	1,956	2,283	1,350	1,464	1,716	2,266
Laborers, Ex. Fm.	1,070	1,717	2,514	3,127	1,498	1,855	2,324	2,670
<i>Rural Nonfarm</i>								
Professional	913	1,436	1,971	1,873	*	*	*	*
Proprietors	1,020	1,615	2,091	2,215	*	*	*	*
Clerical	914	1,519	1,959	2,079	*	*	*	*
Craftsmen	1,199	1,875	2,539	2,793	*	*	*	*
Operatives	1,275	1,986	2,951	3,107	1,641	2,735	3,844	3,557
Service Wkrs.	1,225	1,773	2,353	2,915	*	*	*	*
Laborers, Ex. Fm.	1,363	2,157	3,224	3,515	1,853	2,831	3,742	3,833
Farm Laborers	1,420	2,379	3,681	4,456	1,849	2,446	4,174	3,759
<i>Rural Farm</i>								
Farmers	1,331	2,146	3,098	3,568	2,080	3,237	5,070	5,413
Farm Laborers	1,333	2,245	3,790	4,235	1,786	2,740	4,074	*

<sup>1</sup> Source: United States Bureau of the Census: FERTILITY—Special Report, P-E No. 5C, Washington, United States Government Printing Office, 1955, Tables 28 and 29. (See Figure 13 for charting of age-specific rates in 15-49 span).

\* Rate is not shown because base is under 4,000.

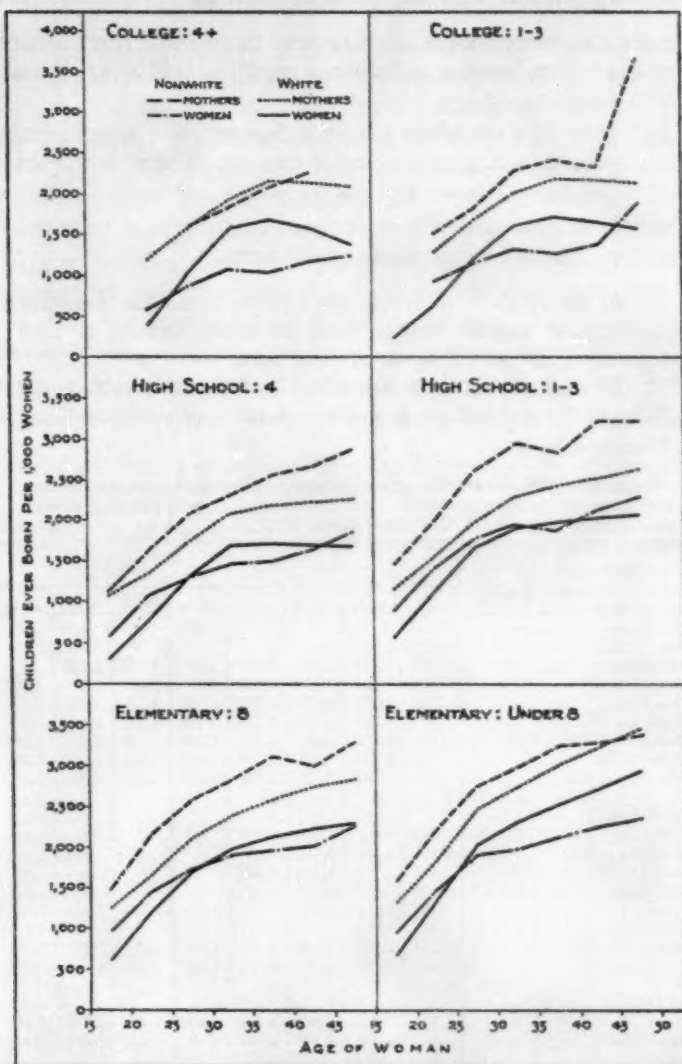


Fig. 14. Children ever born per 1,000 urban white and nonwhite ever-married women and ever-married mothers, by age and educational attainment. United States, 1950.

Source: U. S. Bureau of the Census: *FERTILITY*, Special Report, P.E. No. 5C. Washington, U. S. Government Printing Office, 1955. Tables 20 and 22.



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3. The two preceding statements are reconciled by the fact that nonwhite wives over 25 or 30 years of age exhibit both higher proportions childless and higher proportions with large families than do the whites of similar age and education. For instance, among urban women 35 to 39 years old in 1950, "married once and husband present," and of college 1-3 status, the proportion childless was 23 per cent for the whites and 41 per cent for the nonwhites. However, the proportion with five or more children was 3.1 per cent for the whites and 10 per cent for the nonwhites. (Figure 15 and Table 11.)

Similar situations with respect to occupation group of the husband are apparent in Figure 16. For each of six occupation groups, the fertility rates for nonwhite women (married once and husband present) are about as low as, or lower than, those for white women. Among the mothers the fertility rates are consistently higher for the nonwhites than for the whites.

*Parity Progression Ratios* may also be used to point up the differences between whites and nonwhites with respect to fertility behavior. These are shown by education of the woman in Table 12 and for two educational groups in Figure 17. They are shown by occupation of the husband in Table 13 and for two occupational groups in Figure 18. When derived from distributions of women by number of children ever born, as in the present data, parity progression ratios simply indicate the percentage of women ever of  $N$  parity who had ever progressed to  $N+1$  parity.

Among the youngest women considered (20-24) the 0-to-1 parity progression ratios for nonwhites exceeded those for whites at all occupational levels and for all high school graduates. At ages 25 and over, the 0-to-1 parity progression ratios for nonwhites fall below those for whites at virtually all educational and occupational levels. The 1-to-2 ratios for nonwhites tend to surpass those for whites at ages under 30 and to fall below those for whites at older ages. The 2-to-3, 3-to-4, and 4-to-5 parity progression ratios tend to be strikingly higher for nonwhites than for whites of all ages and classes.

Table 11. Percentage distribution of white and nonwhite women by number of children ever born, according to age and educational attainment. Women married once and husband present of selected ages, Urban areas of the United States, 1950.<sup>1</sup>

AGE AND EDUCATION OF WOMAN	WHITE						NONWHITE					
	None	1	2	3	4	5+	None	1	2	3	4	5+
<i>Age 20-24</i>												
College 4+	68.3	26.8	4.3	0.5	0.0	0.1	*	*	38.3	20.3	4.3	*
College 1-3	52.0	36.2	10.4	1.2	0.1	0.1	35.7	38.3	19.4	6.8	1.3	0.0
High School 4	42.2	40.6	14.6	2.2	0.2	0.0	32.2	39.4	19.4	6.8	1.7	0.5
High School 1-3	28.1	41.4	23.0	6.0	1.1	0.3	27.5	28.5	25.1	12.1	4.7	2.2
Elementary 8	28.3	38.5	23.5	7.7	1.6	0.5	31.1	27.4	20.7	12.3	4.3	4.1
Elementary Under 8	25.9	34.9	24.1	9.8	3.5	1.9	31.0	23.5	20.3	13.8	6.8	4.5
<i>Age 25-49</i>												
College 4+	33.0	38.3	22.3	4.8	1.2	0.4	44.8	32.7	16.5	3.3	1.9	0.8
College 1-3	26.6	35.1	29.0	7.4	1.3	0.6	38.2	29.0	19.2	7.4	4.8	1.3
High School 4	23.1	35.4	30.0	8.9	1.8	0.8	36.0	25.6	19.1	10.3	6.1	2.9
High School 1-3	16.0	32.5	31.4	13.3	4.6	2.3	31.7	20.3	16.9	10.9	10.2	10.0
Elementary 8	18.1	30.9	26.9	14.4	6.2	3.5	32.1	22.6	15.7	10.9	9.6	9.1
Elementary Under 8	16.3	25.1	25.7	16.3	8.6	8.1	29.4	20.2	15.4	12.0	9.1	13.9
<i>Age 35-59</i>												
College 4+	19.3	21.5	35.5	16.7	4.4	2.5	45.2	19.8	20.6	7.1	2.8	4.4
College 1-3	19.0	22.5	33.8	16.2	5.6	3.1	40.7	18.7	16.2	8.3	6.7	9.5
High School 4	19.4	24.3	32.2	14.6	5.8	3.6	37.5	20.5	13.1	10.5	9.4	9.0
High School 1-3	16.5	22.5	30.6	15.9	8.0	6.5	33.6	18.6	16.9	9.1	6.8	14.9
Elementary 8	16.0	20.3	29.1	18.2	8.2	8.2	36.7	18.9	10.0	9.1	7.9	17.2
Elementary Under 8	14.0	17.8	25.2	17.7	10.4	15.0	34.4	16.4	13.5	9.0	7.0	19.6
<i>Age 45-49</i>												
College 4+	30.7	24.0	26.5	11.5	5.0	2.3	*	*	*	*	*	*
College 1-3	25.6	25.1	26.2	14.7	4.5	4.0	52.9	13.5	10.3	7.1	3.9	12.2
High School 4	23.4	25.1	28.0	12.8	5.9	4.9	34.1	17.6	13.0	17.1	4.6	13.5
High School 1-3	18.6	22.0	26.6	14.9	8.2	9.7	34.4	18.4	10.3	11.2	6.6	19.1
Elementary 8	18.1	20.1	25.0	15.0	9.1	12.7	28.2	10.5	17.3	13.0	10.7	20.3
Elementary Under 8	13.2	15.8	21.6	17.0	11.6	20.9	32.0	18.6	12.8	9.8	7.0	19.9

<sup>1</sup> Computed from numerical distributions in U. S. Bureau of the Census, Fertility—Special Report, P-E No. 5C, Washington, U. S. Government Printing Office, 1955, Tables 21 and 23.

\* Ratio is not shown because base is under 4,000.

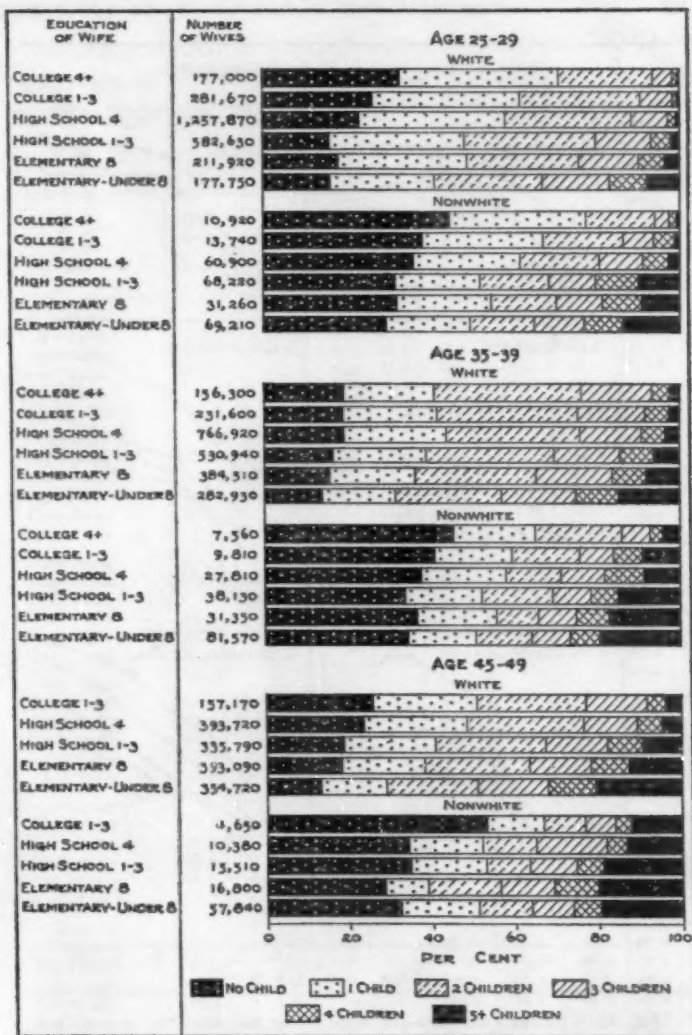


Fig. 15. Percentage distribution of white and nonwhite women "married once and husband present" by number of children ever born, by age and educational attainment. Urban areas of the United States, 1950. (See Table 11.)

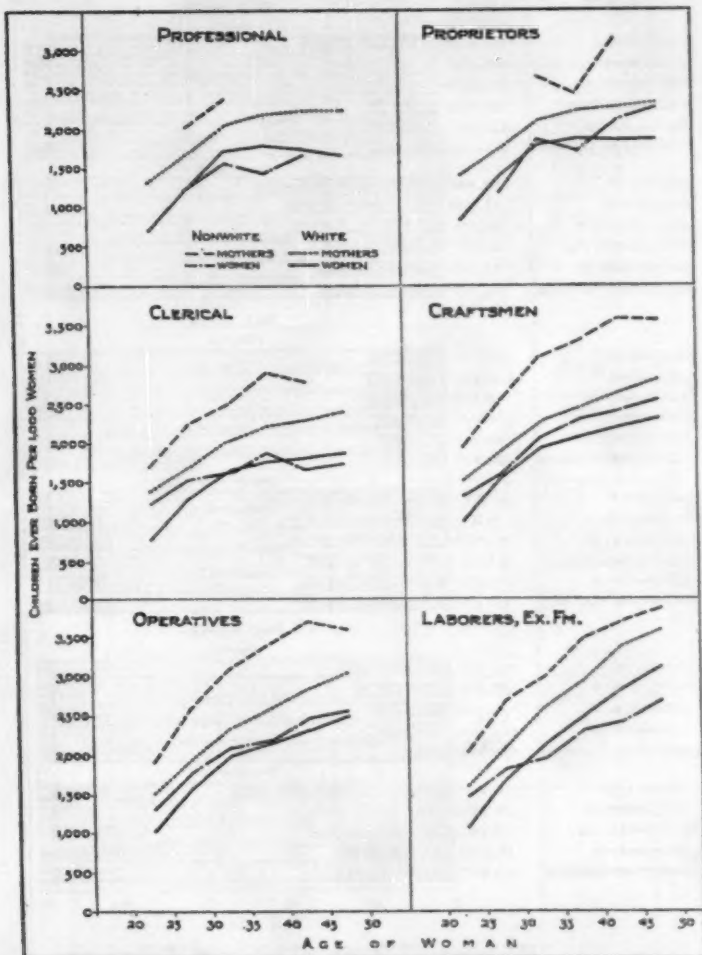


Fig. 16. Children ever born per 1,000 white and nonwhite women and mothers, married once and husband present, by age of wife and major occupation group of the husband. Urban areas of the United States, 1950.

Source: U. S. Bureau of the Census: *FERTILITY*, Special Report, P-E, No. 5C, Washington, U. S. Government Printing Office, 1955. Tables 28 and 29.

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Situations similar to the above are also found in 1950 Census data relating to per cent of women reporting one or more children under one year of age in the 1950 Census, according

Table 12. Parity progression ratios, by color, age and education of ever-married women in urban areas of the United States, 1950.<sup>1</sup>

AGE AND PARITY PROGRESSION	COLLEGE 4+		COLLEGE 1-3		HIGH SCHOOL 4		HIGH SCHOOL 1-3		NONE OR ELEMENTARY	
	White	Non- white	White	Non- white	White	Non- white	White	Non- white	White	Non- white
<i>Age 20-24</i>										
0 to 1 Parity	31.2	45.5	48.3	61.7	57.8	67.0	71.6	71.1	73.2	67.6
1 to 2 Parity	16.1	"	24.7	38.8	29.7	43.2	42.3	60.7	49.8	62.4
2 to 3 Parity	13.2	"	13.0	25.0	15.0	31.9	25.4	41.6	34.6	52.6
3 to 4 Parity	"	"	"	"	11.8	32.3	21.0	35.6	28.7	46.7
4 to 5 Parity	"	"	"	"	"	"	25.6	32.5	32.2	37.7
<i>Age 25-29</i>										
0 to 1 Parity	66.0	54.0	72.5	64.1	76.3	62.5	82.8	69.0	82.0	69.1
1 to 2 Parity	43.0	40.5	51.3	50.0	52.9	57.8	61.1	68.3	65.7	68.0
2 to 3 Parity	22.2	"	24.5	37.8	28.5	47.8	40.4	61.2	51.4	64.7
3 to 4 Parity	23.5	"	20.8	"	22.4	45.9	34.6	61.8	46.1	63.1
4 to 5 Parity	"	"	28.2	"	28.4	37.6	33.9	48.6	44.0	53.4
<i>Age 30-34</i>										
0 to 1 Parity	80.7	58.9	81.1	58.4	81.6	63.4	84.0	66.5	83.9	66.8
1 to 2 Parity	63.6	50.0	66.0	61.9	66.7	63.4	70.4	67.5	72.7	66.7
2 to 3 Parity	32.5	"	36.8	52.8	38.3	53.0	47.4	67.1	55.7	66.9
3 to 4 Parity	25.2	"	27.8	"	33.1	48.1	43.1	68.9	50.8	66.0
4 to 5 Parity	26.3	"	29.1	"	32.0	58.4	40.4	64.1	49.0	67.6
<i>Age 35-39</i>										
0 to 1 Parity	78.5	50.2	78.6	52.4	78.6	58.5	81.9	65.8	83.2	64.8
1 to 2 Parity	70.9	60.4	70.1	59.6	67.5	63.4	71.2	68.4	75.7	69.0
2 to 3 Parity	40.2	"	42.4	59.2	43.0	64.0	50.9	61.2	58.8	69.2
3 to 4 Parity	31.0	"	35.1	"	40.2	58.3	48.1	66.5	53.7	71.9
4 to 5 Parity	35.6	"	35.8	"	39.2	50.2	45.4	63.1	55.2	72.1
<i>Age 40-44</i>										
0 to 1 Parity	73.1	51.9	76.8	58.5	76.4	61.8	81.3	66.3	82.6	68.3
1 to 2 Parity	67.9	59.5	67.2	59.0	65.7	63.0	70.3	65.4	75.8	66.9
2 to 3 Parity	40.8	"	41.6	61.9	45.1	55.9	53.6	72.5	62.4	67.5
3 to 4 Parity	35.6	"	38.4	"	44.7	64.5	51.3	65.9	59.3	70.5
4 to 5 Parity	34.2	"	39.8	"	44.4	71.4	49.4	73.3	58.6	70.4
<i>Age 45-49</i>										
0 to 1 Parity	66.7	50.3	72.8	51.6	74.9	64.3	79.8	70.6	82.9	69.4
1 to 2 Parity	63.0	"	62.4	75.3	65.9	67.0	71.2	65.1	77.1	70.6
2 to 3 Parity	40.5	"	45.9	"	46.2	69.7	55.3	72.8	65.4	70.1
3 to 4 Parity	39.6	"	36.6	"	45.7	57.5	55.4	65.8	63.4	70.6
4 to 5 Parity	33.9	"	48.1	"	45.4	"	54.0	71.8	61.6	69.8

<sup>1</sup> The parity progression ratios were computed from distributions of women by number of children ever born. They indicate the percentage of women ever of parity *N* who ever progressed to parity *N* + 1.

Derived from U. S. Bureau of the Census: FERTILITY, Special Report, P-E No. 5C, Washington, United States Government Printing Office, 1955, Tables 20 and 22.

\* Ratio not shown because base is under 4,000.

Table 13. Parity progression ratios by color and age of woman and occupation group of the husband, women married once and husband present. Urban areas of the United States, 1950.<sup>1</sup>

AGE AND PARITY PROGRESSION	PROFESSIONAL		PROPRIETORS		CLERICAL		CRAFTSMEN		OPERATIVES		SERVICE WORKERS		LABORERS, EXC. FL.	
	White	Nonwhite	White	Nonwhite	White	Nonwhite	White	Nonwhite	White	Nonwhite	White	Nonwhite	White	Nonwhite
<i>Age 20-24</i>														
0 to 1 Parity	51.2	a	58.5	a	56.4	71.5	64.9	68.0	67.4	68.8	65.7	69.2	66.9	73.3
1 to 2 Parity	26.7	a	35.7	a	30.2	46.5	38.9	53.8	38.6	52.9	37.1	56.9	42.1	60.8
2 to 3 Parity	13.1	a	15.4	a	15.7	34.0	22.5	46.6	24.9	44.7	19.2	36.7	31.5	46.4
3 to 4 Parity	a	a	14.8	a	16.0	a	18.8	a	23.4	41.1	a	46.8	25.0	35.0
4 to 5 Parity	a	a	a	a	a	a	23.4	a	26.1	29.9	a	a	a	38.8
<i>Age 25-29</i>														
0 to 1 Parity	73.7	61.1	79.6	63.0	75.1	68.3	81.1	62.1	80.6	69.9	80.4	63.4	80.6	68.8
1 to 2 Parity	51.6	53.5	55.7	a	50.4	63.5	59.3	65.1	60.1	67.9	56.7	61.2	63.1	69.8
2 to 3 Parity	24.4	a	28.1	a	26.8	55.2	35.4	64.1	38.7	62.5	36.2	57.4	44.8	63.8
3 to 4 Parity	17.8	a	26.5	a	21.4	51.8	30.0	57.8	36.5	62.5	30.8	51.9	41.8	64.0
4 to 5 Parity	20.3	a	24.3	a	23.9	a	34.0	53.0	35.4	52.0	38.1	51.4	43.5	50.9
<i>Age 30-34</i>														
0 to 1 Parity	84.1	65.2	85.8	70.3	81.5	63.7	85.1	66.7	85.4	67.9	82.0	60.4	83.0	66.4
1 to 2 Parity	69.3	67.5	71.9	58.4	65.5	73.3	71.4	71.5	71.6	71.8	69.1	66.9	73.8	66.1
2 to 3 Parity	36.1	a	38.4	a	36.3	50.0	45.9	65.3	49.2	69.7	44.4	67.2	55.8	72.4
3 to 4 Parity	26.7	a	32.3	a	31.5	a	41.2	72.0	43.7	66.9	41.9	58.1	53.2	66.7
4 to 5 Parity	28.8	a	28.3	a	33.1	a	36.5	65.1	41.2	65.2	38.7	60.8	52.1	66.2
<i>Age 35-39</i>														
0 to 1 Parity	82.0	59.1	84.3	70.2	79.9	64.2	84.1	69.5	83.2	64.3	78.9	59.4	84.9	66.9
1 to 2 Parity	72.8	a	73.3	61.0	69.2	67.6	73.4	70.8	74.8	77.2	73.5	66.8	77.7	72.5
2 to 3 Parity	41.0	a	42.9	a	43.3	72.2	51.1	66.2	54.6	69.4	52.9	66.3	59.9	71.6
3 to 4 Parity	32.1	a	37.4	a	40.6	a	46.9	77.7	50.1	70.4	45.6	68.5	62.4	71.4
4 to 5 Parity	35.9	a	37.1	a	40.3	a	46.5	69.8	49.9	69.1	44.6	63.0	58.0	72.4
<i>Age 40-44</i>														
0 to 1 Parity	78.2	55.6	81.6	67.7	78.4	59.7	83.0	67.6	82.0	67.5	80.4	65.3	83.9	65.4
1 to 2 Parity	70.3	a	71.5	79.1	69.1	66.9	74.0	73.3	74.1	72.0	71.5	66.1	80.2	73.7
2 to 3 Parity	44.4	a	45.2	a	44.6	a	56.1	71.9	60.3	69.7	57.2	60.9	68.8	76.3
3 to 4 Parity	38.9	a	42.7	a	45.2	a	52.9	76.5	57.5	71.4	53.0	69.5	67.1	73.4
4 to 5 Parity	37.8	a	38.3	a	46.9	a	52.1	69.3	57.6	74.8	48.4	69.0	60.5	73.6
<i>Age 45-49</i>														
0 to 1 Parity	75.0	a	80.2	62.2	77.6	59.2	82.4	72.0	82.7	70.7	78.9	66.0	86.8	68.9
1 to 2 Parity	68.7	a	69.4	a	69.2	a	75.1	74.7	76.6	71.3	72.6	67.5	83.1	80.8
2 to 3 Parity	45.2	a	48.6	a	49.2	a	60.3	77.2	63.2	70.6	60.7	73.7	70.0	70.8
3 to 4 Parity	40.0	a	45.3	a	48.5	a	57.4	67.5	63.2	70.2	63.1	71.7	69.5	70.6
4 to 5 Parity	40.8	a	48.5	a	52.2	a	56.6	a	60.4	77.1	57.4	70.7	66.7	77.9

<sup>1</sup> See note, Table 12. Computed from *Quarterly, Special Report*, P-E No. 5C, *op. cit.*, Tables 28 and 29.

\* Ratio is not shown because base is under 4,000.



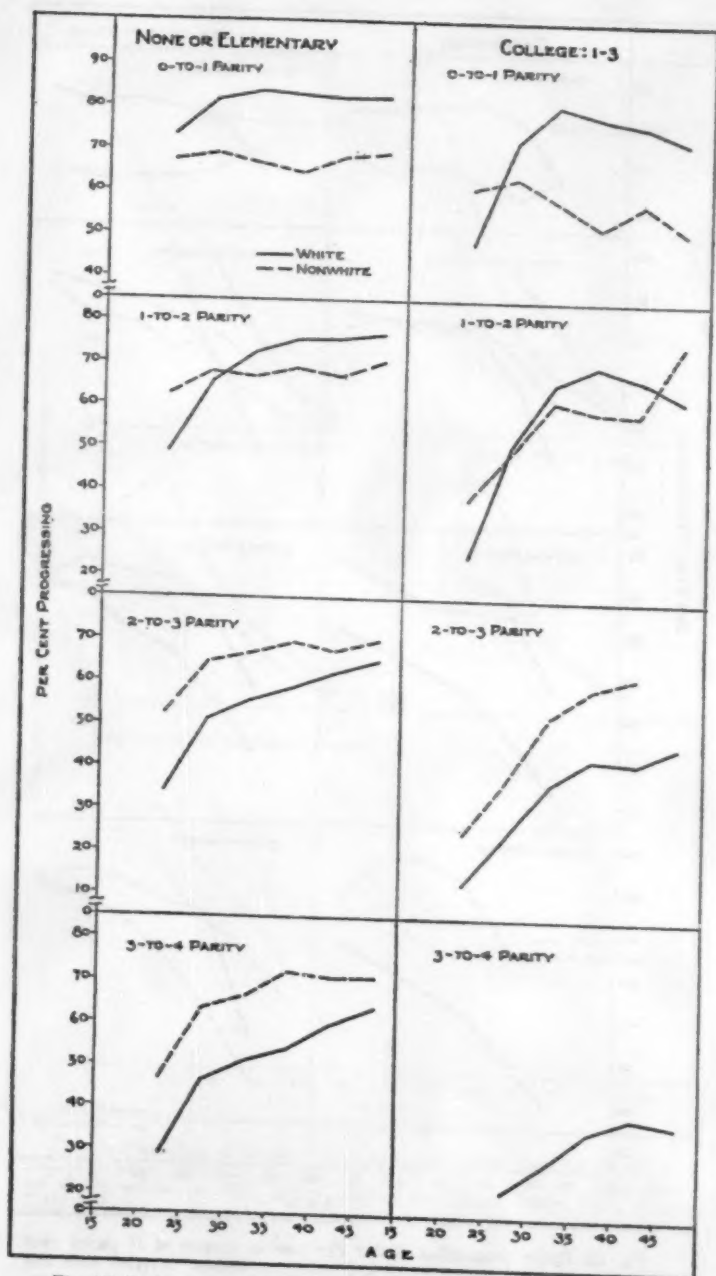


Fig. 17. Parity progression ratios: Per cent of women on  $N$  parity; ever progressing to  $N+1$  parity; white and nonwhite ever-married women of specified education, age, and parity. Urban areas of the United States, 1950. (See Table 12.)

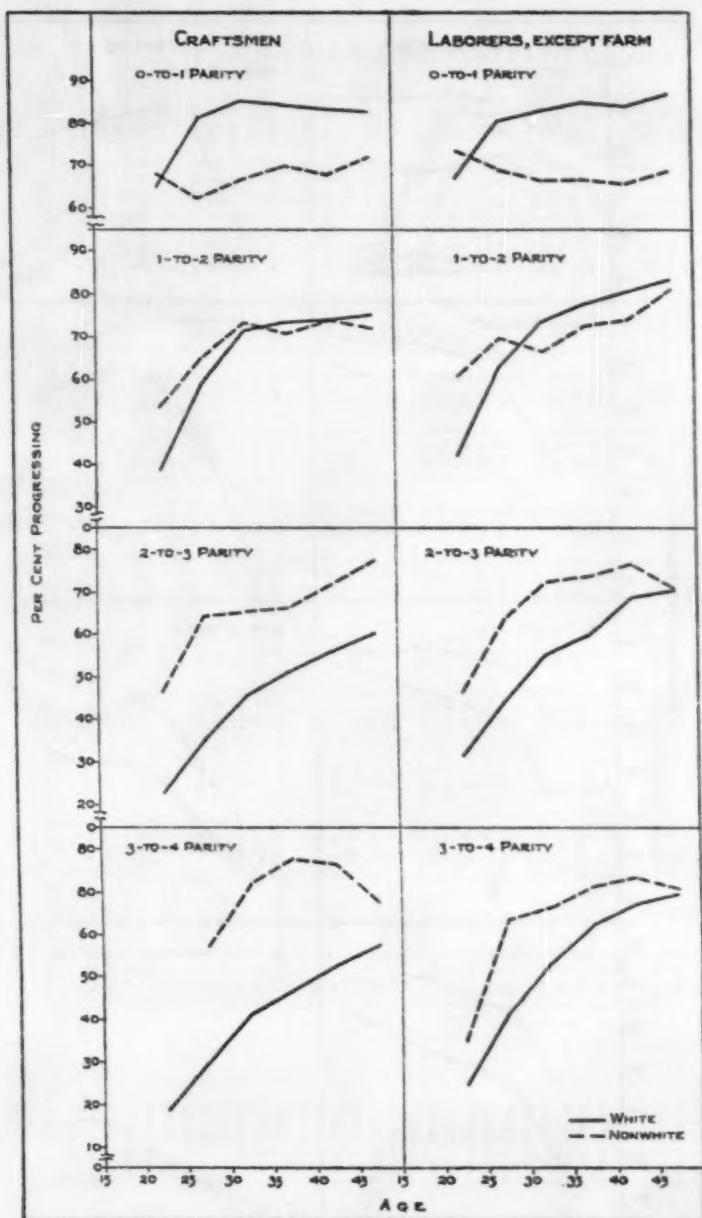


Fig. 18. Parity progression ratios: Per cent of women of  $N$  parity ever progressing to  $N+1$  parity, white and nonwhite women "married once and husband present," of specified age and parity of the woman and major occupation group of the husband. Urban areas of the United States. (See Table 13.)

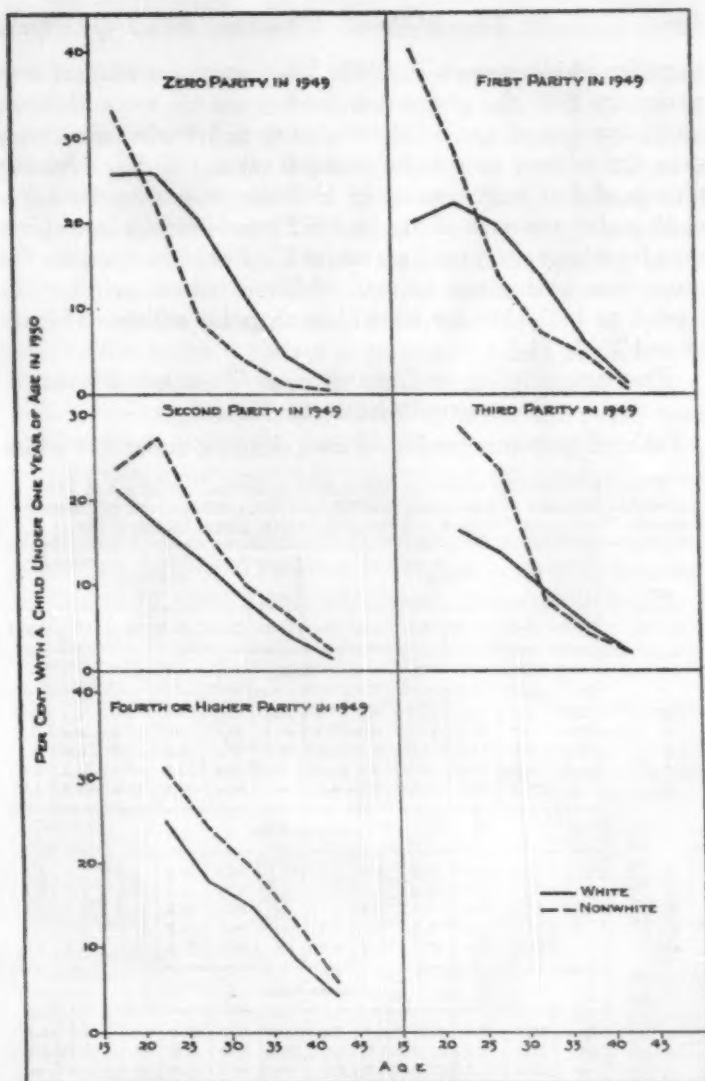


Fig. 19. Percentage of women reporting a child under one year of age in the 1950 Census, according to parity of the woman in 1949, by color, and age of the woman in 1950. Urban areas of the United States, 1950. (See Table 14.)

to parity of the women in 1949. Thus, among women of zero parity in 1949 the proportion having one or more children under one year of age in 1950 tended to be lower for nonwhites than for whites, except at youngest ages (15-19). Among women of first parity status in 1949 the proportion having a child under one year of age in 1950 was lower for nonwhites than for whites except at ages under 25. For higher parities the proportion having one or more children under one year old tended to be higher for nonwhites than for whites. (Figure 19 and Table 14.)

FERTILITY RATIOS BY EDUCATION OF WIFE AND MAJOR  
OCCUPATION GROUP OF HUSBAND

Table 15 presents number of own children under five years

Table 14. Percentage of women with a child under one year of age in 1950, according to parity of the woman in 1949, by color, residence, and age of the woman. Women married once and husband present. United States, 1950.<sup>1</sup>

RESIDENCE AND PARITY IN 1949	WHITE						NONWHITE					
	15-19	20-24	25-29	30-34	35-39	40-44	15-19	20-24	25-29	30-34	35-39	40-44
URBAN												
0	25.9	25.8	20.5	11.9	4.3	1.3	33.1	22.3	8.4	4.0	1.1	0.5
1	20.1	22.5	19.8	13.9	6.2	1.3	40.5	28.4	14.0	7.2	4.6	0.5
2	21.3	16.9	12.7	8.0	3.9	1.2	23.7	27.3	16.8	9.9	6.4	2.2
3	—	16.4	13.5	9.2	4.9	1.9	—	28.6	23.2	8.0	4.2	2.0
4+	—	24.9	17.8	12.2	8.6	4.2	—	31.4	24.3	19.4	13.2	5.9
RURAL NONFARM												
0	28.6	29.4	20.2	10.4	4.8	1.2	31.7	26.2	10.0	1.5	3.6	0.7
1	24.5	26.2	20.3	12.0	5.9	1.4	30.8	33.6	18.2	5.9	2.7	0.6
2	22.0	17.3	13.5	8.3	4.3	1.5	—	28.1	20.3	11.4	6.0	0.7
3	—	19.5	13.5	8.4	5.7	1.9	—	29.7	19.7	15.2	—	1.4
4+	—	21.0	19.9	13.7	10.2	4.6	—	29.9	27.3	22.5	18.0	6.6
RURAL FARM												
0	28.4	29.9	20.8	10.2	3.6	3.6	32.4	28.9	10.8	4.5	1.7	0.4
1	25.7	27.6	24.3	14.1	6.0	2.0	32.6	35.8	23.0	15.3	0.5	0.7
2	—	20.4	17.4	9.1	4.9	1.8	—	34.2	22.6	10.9	3.8	—
3	—	21.4	17.2	11.0	6.2	2.4	—	34.2	26.8	14.4	4.6	2.2
4+	—	19.3	19.5	16.7	11.5	6.4	—	27.8	34.9	25.7	20.7	9.6

<sup>1</sup> Source: U. S. Bureau of the Census: FERTILITY, Special Report, P-E No. 5C. Washington, U. S. Government Printing Office, 1955, Tables 30 and 31.

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old per 1,000 urban women of selected ages in unbroken first marriages, by color and education of the wife and occupation group of the husband. It will be noted that among the women 20-24 years of age the inverse relation of fertility ratios to education and occupation is fairly well marked among both whites and nonwhites. The whites 30-39 and the nonwhites 30-34 years old exhibit a fairly marked *direct* relation of fertility ratios to educational attainment insofar as the women of high school and college status are concerned. By occupation the fertility ratios for wives of professional men are relatively high at the ages mentioned for whites and nonwhites.

As previously noted, since fertility ratios are based upon children born during the preceding five years they reflect current fertility quite sensitively but they are also much influenced by timing of births. Although women 30-34 years of age who graduated from College outrank other educational groups with respect to number of children under five years old, they were outranked by most other educational groups with respect to

Table 15. Children under five years old per 1,000 women of selected ages, married once and husband present, by color and education of the woman and occupation of the husband. Urban areas of the United States, 1950.<sup>1</sup>

EDUCATION OF WIFE AND OCCUPATION OF HUSBAND	WHITE				NONWHITE			
	20-24	25-29	30-34	35-39	20-24	25-29	30-34	35-39
<i>Education of Wife</i>								
College 4+	346	883	914	573	a	632	648	298
College 1-3	580	932	808	465	892	655	543	388
High School 4	722	918	703	411	912	755	503	374
High School 1-3	967	901	613	351	1,113	779	489	344
Elementary 8	970	900	619	355	987	742	515	287
Elemen. Under 8	1,066	984	679	420	1,045	796	511	381
<i>Occupation of Husband</i>								
Professional	615	931	852	498	a	755	576	386
Proprietors	743	914	722	405	a	530	610	357
Clerical	704	883	709	413	962	771	515	331
Craftsmen	861	926	652	373	993	687	544	340
Operatives	889	928	646	379	968	808	549	342
Service Wkrs.	847	939	635	386	1,009	685	438	264
Laborers, Ex. Fm.	914	972	700	451	1,122	793	470	412

<sup>1</sup> Source: United States Bureau of the Census: *FERTILITY*, Special Report, P-E No. 5C, Washington, United States Government Printing Office, 1955. Tables 44, 45, 48 and 49.

a Ratio is not shown because base is under 4,000.

number of children ever born. Thus we have the situation of educational attainment being inversely related with cumulative fertility rates and at least to some extent directly related with fertility ratios among white married women, 30-39 years old, and among nonwhite married women 30-34 years old.

#### CONCOMITANTS OF INCREASE IN NONWHITE FERTILITY

The increase in fertility among the young nonwhites in this country since 1940, and especially that since 1950, has taken place in the context of increasing urbanization through accelerated migration from rural to urban areas. It has occurred in the context of great improvements in occupational opportunity, educational attainment, physical health, general levels of living, and citizenship status.

Among nonwhite ever-married women 20 to 24 years of age about 47 per cent were in urban areas and 34 per cent were in rural-farm areas in 1940. In 1950, 65 per cent were in urban areas (old definition) and 16 per cent were in rural-farm areas. The proportion of these women that had completed 4 years of high school or had further education was 11 per cent in 1940 and 23 per cent in 1950. Among nonwhite women of this age and in unbroken first marriages, the proportion whose husbands were in white collar occupations (professional, proprietary, and clerical) was 3 per cent in 1940 and 8 per cent in 1950. The proportions with husbands in unskilled and agricultural occupations was 66 per cent in 1940 and 46 per cent in 1950.

The great improvements in health of the nonwhites in recent years is indicated by the declines in the crude death rate and declines in the death rate from *selected* causes which previously were especially high among the nonwhites. The death rates of nonwhites from tuberculosis, for instance, have tumbled from high levels during the past 20 years.

Possibly of particular relevance to the decrease of childlessness among young nonwhites since 1940 have been the gains in the control of venereal disease through new medical dis-



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coveries and through community education. Figure 20 points up a dramatic reduction since 1940 in the death rates from syphilis among the nonwhites. Figure 21 indicates a striking reduction in the ratio of fetal deaths to live births among nonwhites since 1930.

Data from the Eastern Health District of Baltimore have pointed up at once the higher incidence of venereal diseases among Negroes than whites and the existence of a downward trend in the incidence of venereal diseases among Negroes even during the thirties.<sup>8</sup>

There are really no adequate empirical data that would indicate how much cause and effect interrelation exists between the national trends in (a) control of venereal diseases among nonwhites and (b) reduction in childlessness and increase in fertility of young nonwhite couples.<sup>9</sup> However, the medical or clinical relationship appears to be clear-cut. It was described briefly by Taylor, Wyon, and Gordon, as follows:

Certain diseases, especially the venereal infections, produce pathological changes which decrease chances of conception. Gonorrhea is an important cause of sterility in women by causing salpingitis and cervicitis, with the added probability that purulent discharges in the vagina are spermicidal. The male suffers the acute effects of urethritis and the chronic effects of

<sup>8</sup> Skeleton figures are as follows:

Cases of Syphilis per 1,000 Population, All Ages.

	White		Nonwhite	
	Male	Female	Male	Female
1932	2.19	1.48	29.0	29.5
1935	1.73	1.58	22.6	24.5
1940	1.55	0.82	23.5	21.4

See Turner, Thomas B.: Dyar, Robert, Clark, E. G., and Birkhead, Mary Footner: Studies on Syphilis in the Eastern Health District of Baltimore City. *American Journal of Hygiene*, 37, 1943, p. 273.

<sup>9</sup> Although the term nonwhite is used, childlessness has not been unusually prevalent among the nonwhites other than Negroes.

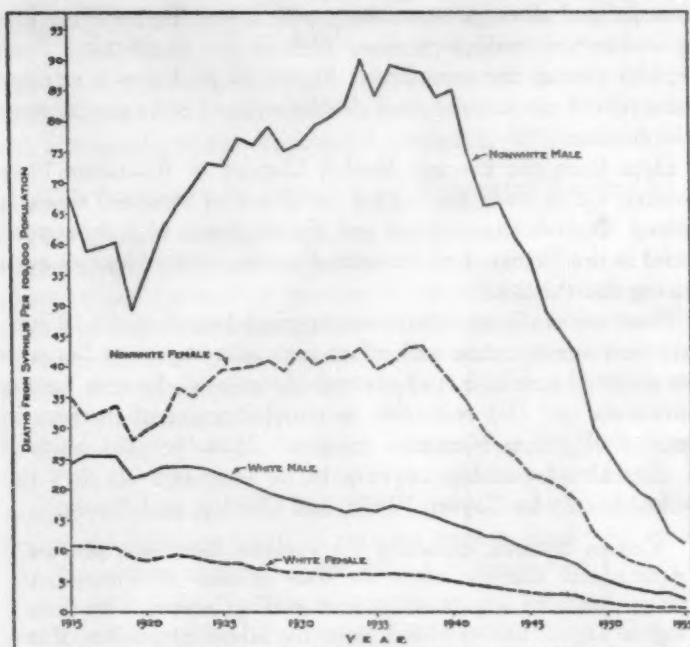


Fig. 20. Annual number of reported deaths from syphilis by color and sex. Rates adjusted for age. United States, 1915-1954.  
Source: U. S. Department of Health, Education, and Welfare: *Vital Statistics*—Special Report, 43, No. 8, May 15, 1956. Table 1.

orchitis and epididymitis. Syphilis limits successful pregnancies by causing abortion and miscarriage, as do malaria and other major febrile illnesses.<sup>10</sup>

There are small bodies of data affirming the relatively low pregnancy rates and relatively low proportion of pregnancies terminating in live births among Negro women with syphilis as compared with those without syphilis. In her article, "Syphilis and Uncontrolled Fertility," published in 1941, Stix adduces data from her own studies in Spartanburg County, South Carolina, and from two other studies. Her own series of

<sup>10</sup> Carl E. Taylor, M.D., John B. Wyon, M.B., and John E. Gordon, M.D.: *Ecologic Determinants of Population Growth*. The Milbank Memorial Fund Quarterly, xxxvi, No. 2, April, 1958, p. 115.

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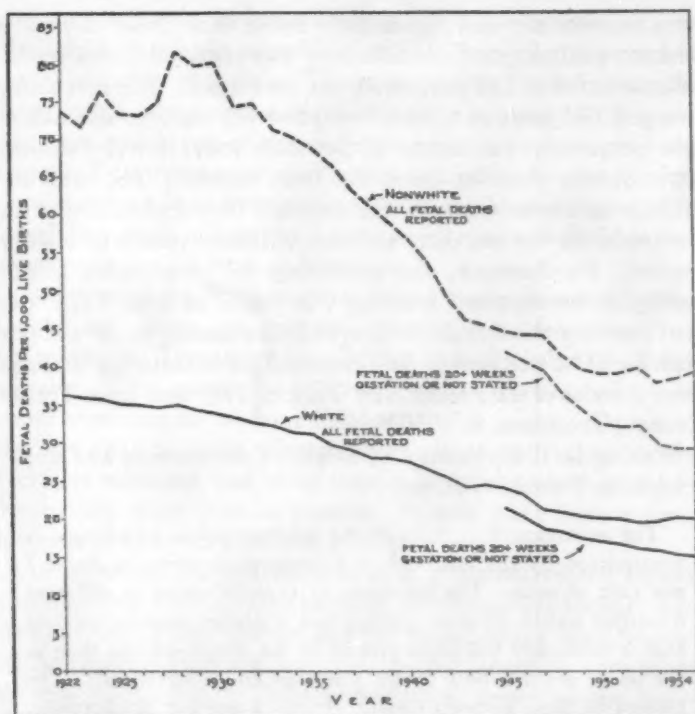


Fig. 21. Annual number of fetal deaths per 1,000 live births reported in the registration area of the United States, by color, 1922-1955.  
Source: United States Department of Health, Education, and Welfare: *VITAL STATISTICS OF THE UNITED STATES*, 1955, Vol. 1, Washington, Government Printing Office, 1957. Table AT.

cases were 457 Negro women referred to the Spartanburg Maternal Health Clinic for contraceptive advice. Of these, 25 per cent had three- or four- plus Wasserman and/or Kahn reactions, and an additional 6 per cent had one- or two- plus reactions.

Stix's comparisons were between 241 women without any pathology which might be expected to affect fertility and 111 women with syphilis but free from serious pelvic or endocrine pathology. The pregnancy rates of the women with syphilis

were consistently and significantly lower than those of women without pathology. The difference was especially striking insofar as rates of first pregnancy are concerned. The pregnancy rate per 100 years of noncontraceptive exposure to the risk of first pregnancy was about 43 per cent lower for the women with syphilis than for those free from syphilis. The rates for later pregnancies were on the average 19 per cent lower for the syphilitic women than for those without syphilis or history thereof. Furthermore, the percentage of pregnancies terminating in involuntary wastage was twice as high (25.7 per cent) among the women with syphilis as among those without syphilis (13.1 per cent). Stix reported substantiating findings from a series of data from New York in 1923 and from Tipton County, Tennessee, in 1930.<sup>11</sup>

Writing in 1944, Samuel L. Siegler, (obstetrician and gynecologist in Brooklyn) stated

The existence of syphilis in the mother, either hereditary or transmitted by the husband, is a cause of abortion in about 7 per cent of cases. The incidence of syphilis varies in different countries and in different groups, and statistics seem to indicate that it is roughly ten times greater in the Negro woman than in the white woman, both in the pregnant and nonpregnant. The history of these patients usually reveals a number of abortions, premature labors, and finally, the delivery of a full-term child either macerated or with congenital syphilis.<sup>12</sup>

Although it seems likely that a cleanup of venereal infection during the past 10 to 15 years has been a material factor in the decrease in childlessness and increase in fertility of young non-white couples, there are doubtless other factors in the problem.

<sup>11</sup> See Stix, R. K.: Syphilis and Uncontrolled Fertility. *The American Journal of Obstetrics and Gynecology*, 42, No. 2, August 1941, pp. 296-303.

Crabtree, J. A. and Bishop, E. L.: Syphilis in a Rural Negro Population in Tennessee. *American Journal of Public Health*, 22, 1932, pp. 157-162.

Health Work for Mothers and Children in a Colored Community. New York Association for Improving the Condition of the Poor. Publication 131, 1924. Tables VIII and IX.

<sup>12</sup> Siegler, Samuel L.: FERTILITY IN WOMEN. Philadelphia, J. B. Lippincott Company, 1944, p. 427.

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One may well ask, for instance, why childlessness was not particularly high among nonwhites in 1910 and why it increased some time after that date. The writer thinks it likely that the disproportionate amount of childlessness among the Negroes was part and parcel of the early stages of urbanization of the Negro. To some extent the family and personal disorganizations involved in that transition may have been manifested in instability of marriage and increases in venereal diseases and consequent involuntary childlessness.

However, there are two other broad classes of contributing factors and these too may be considered in the context of urbanization. These are (1) selection and (2) voluntary childlessness. With respect to selection, various studies have indicated that couples without children find it easier to move to the city than do those with children. It seems likely that the factor of selection was more important in the early stages of Negro migration than at present. It may have been a more important factor in 1930 and 1940 than in 1950.

As for voluntary childlessness among the nonwhites, several studies of the role of contraception in differential fertility carried out during the thirties and forties suggested that Negroes of the laboring class did not practice contraception very much or very effectively.<sup>13</sup> These observations underlay the hypothesis that the high degree of childlessness among urban Negroes was involuntary and probably symptomatic of medical sterility. This interpretation is consonant with the hypothesis that much of the recent increases in fertility of the young nonwhite couples is attributable to a cleanup of infection from venereal disease. Whatever that situation may be it is likely that voluntary factors account for the high proportion childless among the nonwhite wives of college status or those married to men in professional and clerical occupations.

Among the nonwhites as among the whites, late marriage accounts for some of the high degree of childlessness in the

<sup>13</sup> Beebe, Gilbert W.: *Differential Fertility by Color for Coal Miners in Logan County, West Virginia*. The Milbank Memorial Fund *Quarterly*, 19, No. 3, October 1939, pp. 189-195.

so-called upper classes. There is no doubt that among these groups the deliberate practice of contraception is more common than in other groups. It also seems likely that among all groups the knowledge and use of means of family limitation was more widespread in 1950 than in 1940. That there have been marked increases in the fertility rates of young nonwhite couples would seem to be the result of (a) increases in proportions of couples without medical impairments of fecundity and (b) a greater degree of encouragement to have children than in the years preceding 1940.

#### SUMMARY

Nearly 16 million people were enumerated as nonwhites in the 1950 Census of the United States. Nearly 96 per cent of these were Negroes. During 1940-1955 the crude birth rate increased by 28 per cent for whites and by 30 per cent for nonwhites. The 1940-1955 increases in the gross reproduction rates were 54 per cent for whites and 58 per cent for nonwhites. For both whites and nonwhites the cumulative fertility rates, based on total number of children ever born, were lower in 1950 than in 1940 for women 35 years of age and over; they were higher in 1950 than in 1940 for women under 35 years old. The maximum increases came at ages 25-29 for whites and at ages 15-19 and 20-24 for nonwhites.

Much of the increase in fertility of the young nonwhites has been due to a remarkable decline of childlessness. In 1940, and probably during the preceding 20 years, the proportions childless were conspicuously high among Negroes in urban areas, particularly in large cities. In 1950 the proportions childless were still higher among nonwhites than whites 25 years of age and over; they were lower among nonwhites than whites below age 25. Possibly the former problem of childlessness among urban nonwhites originated in (a) heavy selection of childless couples moving to cities and (b) personal and family disorganization including much venereal infection in the first stages of urbanization. Whatever may have been the reasons for the rise



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and subsequent decrease of childlessness among young Negroes in the United States since 1910, it is apparent that the recent declines in childlessness and the recent increases in fertility of young nonwhite couples have occurred during a period of medical discoveries and community action for reduction of venereal disease. They have occurred in the context of advances in the economic, educational, and civic status of the nonwhites in the United States.

The trends and differentials in fertility of nonwhites by educational attainment of the wife and occupation group of the husband have been much the same as those observed for whites. In general, the 1940-1950 per cent increases in proportions married at young ages and the increases in marital fertility of young women were directly associated with socio-economic status. Nevertheless, the inverse relation of fertility to socio-economic status still existed in 1950 among nonwhites as well as whites.

The first thing I noticed when I stepped  
out of the car was a warm, humid breeze.  
The air was thick with the scent of  
tropical flowers and the distant  
hum of a city. I took a deep breath,  
savoring the feeling of being in a new  
place. The sun was shining brightly,  
and the colors of the buildings and  
streets were vibrant and alive. I  
felt a sense of adventure and  
curiosity. I was about to embark on  
a journey that would change my life.  
I looked up at the sky, where a few  
clouds were drifting lazily. The  
world was so full of possibilities,  
and I was about to explore them all.  
I took a step forward, feeling the  
ground beneath my feet. The world  
was so big and so beautiful, and I  
was about to see it all. I felt a  
sense of freedom and a sense of  
purpose. I was about to start a new  
chapter in my life, and I was  
excited to see what it would bring.

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